PHILOSOPHY

THE JOURNAL OF THE BRITISH INSTITUTE OF PHILOSOPHY

VOL. VIII, No. 29. JANUARY 1933

TERCENTENARY OF SPINOZA'S BIRTH: SPINOZA'S SYNOPTIC VISION[1]

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(Followed by Contributions by Professor S. Alexander and Sir Herbert Samuel)

A SYSTEM of philosophy, a comprehensive world-view, is a work of art, although it is also more than that. Already Plato described the philosopher as a poet, and Plato himself was a great poet as well as a great philosopher. In recent years Professor Alexander has explained, on various occasions, that there is artistry involved in all scientific and philosophic thought. They demand creative intellectual construction of a high order. In so far as this is true, as I believe it is, it should be possible, sometimes at least, to contemplate a great system of philosophy as a work of art, to enjoy it in a spirit of detachment, above the noise and the tumult of conflicting personal convictions. It is more or less in this spirit that I propose on this occasion to deal with some of the fundamental ideas of Spinoza. That, I believe, is in accordance with his own wishes. He wanted his works to be published anonymously, so that his philosophy might be considered impersonally, entirely on its own merits. Such a method of treatment may in any case be most suitable on this occasion when, in spite of probably great divergences in our individual views, we have come together to do honour to his memory. This kind of personal tribute may be contrary to his own wishes. But we owe it to ourselves, and to mankind at large, to keep alive the remembrance of one of the greatest masters of the art of high thinking and plain living.

The main task of a philosopher, as a creative artist, is to conceive and to present an harmonious picture of the most significant features of the

[1] Given to the British Institute of Philosophy, November 24, 1932.

universe. His experience is necessarily as limited as that of other mortals; his data are extremely fragmentary in comparison with the whole world. On the other hand, even ordinary experiences are very varied, very extensive, and very perplexing. The philosopher has therefore a twofold difficulty. On the one hand, there is the difficulty of construing a vast universe on the basis of an infinitesimal sample of experiences. On the other hand, there is the difficulty of fitting the enormous variety of his data into a consistent scheme. Those who give up the attempt as too ambitious cannot be blamed. Those who regard any and every such attempt as at best only moderately probable, and therefore not to be embraced with fanatical zeal, are wise. Yet the attempt is not only legitimate and fascinating, but possibly incumbent on all intelligent people whose energies are not exhausted by their daily work or play, whose interests extend beyond their daily needs, and who have sufficient curiosity to take their bearings in this mysterious universe. And the relative success, or the artistic satisfaction, of any such philosophic construction may be gauged by the measure of systematic integration which it achieves without sacrificing anything that has a *prima facie* claim to be regarded as real. Considered in this way, the philosophy of Spinoza appears to me to be the most satisfactory that has yet been propounded. And I propose to indicate briefly some of its advantages over certain other systems. I do not wish to suggest that it is beyond criticism. But we are here now to praise Caesar, not to bury him.

First, however, I must sketch in barest outline the main metaphysical features of Spinoza's system. According to Spinoza, the whole of reality is an organically interconnected system or cosmos in which nothing happens by chance, but everything takes place in an orderly manner in accordance with invariable laws. This view was arrived at partly in the following way. In order to explain any object or event it is necessary to refer to innumerable others which condition it, and each of these is in turn dependent on innumerable others. Everything seems to be linked up by countless ramifications with ever so many other things and events with which it stands in relations of mutual interdependence. It seems to be a reasonable conclusion that in the last resort all things and events are but parts of one systemic whole. But is it reasonable to suppose that the whole world consists only of such conditional dependent realities? Spinoza, like others, thought that there must be some self-existing, independent, unconditioned or absolute Being as the ultimate ground of all that is conditioned and dependent. So far his views would meet with little opposition. The provoking thought was his conception of the relation of the all-sustaining ground, or absolute Being, to the world of dependent objects and events. According to the conventional answer, in his days and in ours, this absolute Being

is God, a supernatural Being who has created the world out of nothing, maintains it, and occasionally interferes with its usual mode of operation. But Spinoza conceived of the absolute self-existing Being (or Substance) as immanent in the world, as sustaining it from within, and as giving rise to the endless wealth and variety of natural phenomena, not by acts of external or transeunt creation, but by the immanent expression of its own energies—somewhat after the manner in which a mind forms its thoughts, or the sea forms its waves.

Spinoza's metaphysic does indeed go, as all metaphysic must go, beyond the strict bounds of empirical science. But his procedure was strictly scientific in spirit. Physical phenomena, he insisted, need for their explanation other physical phenomena by which they are conditioned, and which alone can account for them; but in the last resort they can only be explained by reference to an infinite (*i.e.* completely exhaustive) physical energy of which they are modes or modifications. In the same way mental experiences must be accounted for by other mental experiences by which they are conditioned, and which alone can explain them; but in the last resort mental events can only be explained adequately by reference to an infinite mind-energy, of which they are modes or modifications. Moreover, there may be an infinite variety of other kinds of realities than the physical or the psychical, with corresponding kinds of infinite energies of which they are severally the modes or modifications.

These ultimate realities or powers he called "attributes," and conceived them as constituting between them the one absolutely infinite Substance, or self-existent Universe, whose immanent activities express themselves in all the endless wealth and variety of its contents. Reality as conceived by Spinoza is essentially dynamic, active. In anticipation of much later tendencies he conceived "Extension" as a kind of space-filling energy, not as something inert. "Thought" likewise he regarded as essentially an activity; ideas, he insisted, are activities, not "dumb pictures on a tablet." And so with the other Attributes. Thus the universe was represented by him, to quote Goethe's paraphrase, as

> A limitless ocean,
> A constant weaving,
> With change still rife,
> A restless heaving,
> A glowing life.

So far I have not said anything about God in the system of Spinoza. I want to reserve this for separate treatment. But I must point out at once that a philosopher who not only admitted the claims to reality of both matter and mind, but, so to say, staked out the

claims of an infinite variety of realities unknown to man, was not likely to overlook God. Taking very seriously the common conception of God as the self-existent ground of all that is real, Spinoza identified God with "Substance"; and by elevating the conception of Nature so as to make it equivalent to that of the Universe, Spinoza equated the three terms, God, Nature, Substance. I hope to indicate soon something of the religious fervour of Spinoza's pantheism. But for the moment I am mainly concerned with the broad outlines of his ontology, which I propose to compare very briefly with some other philosophies.

First, Spinoza's philosophy does present us with an integration, a wholeness, such as no other system has ever surpassed or even equalled. It embraces in one coherent scheme God as well as Nature. It ignores nothing that has a *prima facie* claim to reality, and leaves ample room for an infinite variety of realities other than those which are accessible to human experience. Contrast with it the many systems of philosophy, ancient, mediaeval and modern, in which there is no real *uni*verse, no *one* world, but rather two or more separate worlds more or less arbitrarily strung together. Plato, for instance, never really integrated the world of immutable Ideas with the changing world of sensible objects—the world of Being with the world of Becoming. Aristotle likewise never succeeded in unifying the perfectly orderly superlunar world with the imperfect sublunar world of chance. Nor did Descartes succeed in bringing God, bodies, and souls into systematic relationship. Or compare Spinoza's systemic monism with some of the modern monisms in which an impoverished unity is achieved by sacrificing either Mind or Matter, and either representing physical facts as mere appearances to minds, or mental facts as mere by-products of matter. In contrast with these attenuated monisms Spinoza maintains the ultimate reality of both mind and matter; and, realizing the danger of setting up human experience as the measure of all things, he insists on the possible reality of infinite realms beyond our ken. Moreover, the assertion of an infinite variety of reals provides an infinite wealth of objective contents of experience, human and superhuman. Compare with it some of the current monadistic philosophies, according to which individual spirits are the sole realities, and the experience of each monad is but a reflection of the experience of the other monads—a scheme which seems to resemble the economics of a certain legendary island, the inhabitants of which are reported to have all got their living by taking in each other's washing.

Again, the infinitely rich universe as conceived by Spinoza has a thoroughgoing orderliness such as it has in almost no other system of philosophy. In the most influential classical philosophies, as has already been indicated, considerable room was left to mere chance

and riot in the universe. And in many modern philosophies supernatural incursions are permitted to interfere with the order of Nature. The faith in magic which played such an important rôle in primitive thought dies hard, and in one form or another has survived to the present day. I sometimes wonder how far it unconsciously haunts modern idealism. Do not idealists seem to think of God, or the Absolute, as the Supreme Magician or Illusionist, who gives us the appearance of a material world without the reality? And is there not some faint trace of the same survival of early belief in magic even in the present-day philosophy of emergent evolution? As a bare description of the limited data of our experience, and as a protest against a one-sided materialism, it is no doubt just to indicate the fact that higher or more complex types of things are known to "emerge" somehow from simpler forms. But a philosophy which stops there seems to admit the possibility of something arising miraculously out of nothing, and thereby to acknowledge a kind of magic. The philosophy of Spinoza is more satisfactory in that respect. Nothing is represented as arising out of nothing. The infinite variety of natural phenomena is represented by it as a manifestation of what is already provided for from all eternity, as the expression of infinite powers acting in accordance with eternal laws. I do not suggest that Spinoza ever succeeded in explaining how exactly the infinitely various natural phenomena flow from their ultimate ground in the infinite Attributes of God. On the contrary, he himself has explicitly asserted that he could not do so, and that there is only one Being who has such knowledge, namely God Himself. But Spinoza's philosophy does, I think, contain the general rubrics for progressively more adequate explanations with the growth of knowledge.

Spinoza's theory of knowledge is in fact intimately bound up with his ontology. He distinguishes three ascending grades of knowledge—perception, reason, intuition, or a pre-scientific stage, a scientific stage, and an ultra-scientific stage of knowledge. At the pre-scientific level, things and events are apprehended more or less in isolation, and as matters of arbitrary caprice or chance. At the scientific level reason discovers the interconnections between things, and also their laws of operation. At the ultra-scientific level, the many interconnections, or "world-lines," discovered by reason are integrated into a cosmic intuition—the synoptic view which philosophy aims at. But for Spinoza this intuition, although it is intellectual and presupposes an antecedent scientific discipline, is not intellectual *only*. It is also emotional—it is "thoughtfulness matured to inspiration." In fact it is no exaggeration to maintain that in Spinoza's "intuition" the synoptic view of the rational philosopher blends with the beatific vision of the religious mystic.

This brings me to the most fascinating aspect of Spinoza's world-view—his pantheism, or the theory that God is All, and All is God, or that God is in *all* things, and *all* things are in God.

Pantheism is, of course, much older than Spinoza. It is to be met with throughout the ages, in the East and in the West. Spinoza was fond of citing the verse from *The First Epistle of John*: "Hereby know we that we abide in him and he in us, because he hath given us of his spirit." This verse was actually used by Spinoza as the motto of his *Theological and Political Treatise.* The earlier forms of pantheism are sometimes described as the expression of *emotional moods* rather than of philosophical theory. Certainly it was Spinoza who has furnished pantheism with its most philosophical exposition. But even in Spinoza's pantheism there is much more than purely rational theory. His pantheism has been described as "mathematical" pantheism. But this is a misleading description; it only tends to make people overlook the religious sentiment which inspired it. I have explained in another place that religion is one of the three roots, the three "R's," of Spinoza's philosophy, the other two being realism and rationalism. It was probably the oldest and the most potent of them. Even the stiff geometrical method of the *Ethics* has failed to obscure it. It shines through, and helps to give to the book that elevating atmosphere which inspires its readers with reverence.

I have already indicated some of the *logic* of Spinoza's pantheistic world-view. Let me add something about its *emotional* side. Pantheistic or cosmic emotion is, I suggest, intimately connected with what is commonly called a feeling for Nature. This seems fairly obvious in the case of the great nature poets, such as Wordsworth and Goethe. Something similar applies to the case of Spinoza, I believe. His pantheism is, on the one hand, the result of the converging demands of both science and religion for an unconditioned, self-existent Being, embracing and sustaining all. Hence Spinoza's identification of God and Nature. On the other hand, his pantheism is an emotional attitude, in which the religious sentiment is blended with the feeling for Nature. It is noteworthy that many of the great religious teachers sought quiet communion with Nature at critical stages in their career—staying on the mountains, meditating in the wilderness, or at least lifting their eyes unto the hills. Spinoza, too, spent many years in the countryside.

Spinoza is so eminent as a rationalist, indeed as the prince of rationalists, that the emotional side of his character is apt to be overlooked. The attribution to him of a feeling for Nature, and the association of it with his "mathematical" pantheism, may appear to be far-fetched. But there is sufficient evidence for my contention. It is known that he spent many years in rural haunts like Ouderkerk, Rhynsburg and Voorburg; and we have the assurance

of his oldest biographer that Spinoza always showed a preference for the countryside. Moreover, poets like Goethe and Schiller, Coleridge and Wordsworth easily sensed the emotional current which flows through the seemingly cold lines of his arguments; and they drew some of their inspiration from him. This is particularly true of Goethe, who may be described as the classic poet of pantheism, just as Spinoza is its classic philosopher. Even those who are mainly interested in its philosophical side will do well to try and sense something of its inward emotional side with the help of the great poets. Let me quote at least one passage in which Goethe gave expression to his pantheistic emotion. The passage occurs in the *Faust*. This is the context. Margaret asks Faust whether he believes in God. Faust, realizing the vast difference between his own conception of God-Nature and her simple everyday theology, feels that a mere yea or nay would be a misleading reply. So he attempts, in language that baffles adequate translation, to conjure up for her benefit the vision of a God whose presence is, and is to be felt, in all things and in all experiences, and especially in great things and in deep experiences. Here are the lines:

> The All-embracing,
> The All-sustaining,
> Holds and sustains He not
> Thee, me, Himself?
> Is not the vault of Heaven above?
> Lies not the Earth so firm beneath?
> And in the heavens, gleaming friendly,
> Rise there not the eternal stars?
> Do not mine eyes gaze into thine?
> Do not all things just throng
> Into thy head and heart,
> And weave in endless mystery
> The invisible and visible near thee?
> Fill thy heart therewith, great as it is,
> And if thou feelest perfect bliss,
> Then call it what thou wilt.
> Call it Bliss, Heart, Love, God.
> I have no name for it.
> Feeling is all in all.
> Names are but sound and smoke
> That dim the heavenly glow.

Such a feeling for Nature, or the cosmic emotion, may not be universal among mankind, nor particularly strong or constant among those who do feel it. But it is probably more common than is supposed. Certainly a great many people when they are alone face to face with Nature under conditions of serene beauty, or of unusual grandeur, are overcome by a feeling of being absorbed in their vision, or of expanding into it, by a momentary oblivion of their individual

limitations. But we do not speak of these things. It needs the gift of great poetry to articulate these rare experiences in a manner that shall not provoke the derision of the irreverent. And great poets are few. Spinoza was primarily a philosopher, not a poet. As a philosopher his main business was to give a reasoned justification of the pantheistic theory—to argue its plausibility, not to sing its praises. But this should not blind anyone to the emotional side of his pantheistic attitude, or make them forget that his philosophic intuition was not without its beatific vision.

Spinoza's moral philosophy is as intimately and harmoniously connected with his theory of knowledge as his theory of knowledge is with his ontology. Spinoza associates the main stages of man's moral progress with the several stages of his intellectual progress. At the lowest, the merely perceptual stage of knowledge, man is dominated by the influence of things outside himself, and is consequently in a state of bondage to them. At the next higher stage, the rational or scientific stage, human intelligence asserts itself, and helps to emancipate him from bondage to merely external objects and their coercive influence. The insight gained into things generally, and into human nature more particularly, helps man to acquire some measure of independence of mere externals. A fuller understanding of his own place in the cosmic system, and of the place therein of all the ordinary objects of his likes and dislikes, and especially his increasing grasp of the necessity which is inherent in the very nature of things, tend to cure him of his disappointments, his resentments, and his vain regrets. He gradually grows reconciled to things, and thereby obtains peace of mind. He learns acquiescence in the cosmic order, and gradually rises superior to the turmoil of inner and outer conflicts. At the highest stage of all, that of "intuition," the mind apprehends and feels all things as expressions of the eternal cosmos. It sees all things in God, and God in all things. It feels itself as an integral part of the eternal order, and man identifies his own interests with cosmic interests, contented that "Thy will, not mine, be done." Thereby the human mind becomes eternal as one of the eternal ideas of God's Thought, and attains to that blessedness which "is not the reward of virtue, but is virtue itself." Spinoza fully realized that this was no easy or common achievement. "But," he added, "everything excellent is as difficult as it is rare."

I began my address with a reference to the very unusual degree of integration achieved by the philosophy of Spinoza. Let me conclude my remarks by referring to the profound sense of cosmic unity which Spinoza obviously felt. With this feeling of cosmic unity went his fervent gospel of human co-operation, of the discarding of individual aggressiveness, of the need of seeing things

whole, and of pursuing the highest interests of all as a whole. This was the secret of Spinoza's unselfishness in his life and in his thought. Goethe was profoundly impressed by what he has described as the supreme expression of unselfishness in the literature of the world, namely Spinoza's utterance that "he who truly loves God, does not ask that God should love him in return."

How very different human affairs would now be, if mankind shared more fully Spinoza's unselfishness and his sense of cosmic unity!

SPINOZA: MAN OF SCIENCE AND MYSTIC

PROFESSOR S. ALEXANDER, who was in the chair, said that Spinoza was not only one of the great philosophers, but one of the major philosophers, such as Plato, Aristotle, and perhaps Kant, who represented certain fundamental ways of thought and had accordingly a message for every time as well as for their own. The proper method of treating a great philosopher was no doubt to consider him in his historical setting, so as to bring out exactly what he said in its true meaning. The speaker had no pretensions to do that, which required scholarship beyond his ability. He preferred to take the other and easier line of indicating what Spinoza might mean for us at the present time. From this point of view, what seemed the most striking feature in Spinoza was the fusion in him of man of science and mystic. The speaker had been asked whether there was any distinctive Jewish approach to philosophy, and he had answered (in *The Jewish Review*, No. 2) that he did not know, because in the philosophy of any people the types of thought most prominent in the philosophy of other peoples were to be found. But it was remarkable that the combination of man of science with mystic occurred in two eminent Jewish philosophers, Spinoza and, in our own day, M. Bergson, though the fusion of the two elements in the second philosopher was much less complete than in Spinoza. At any rate, within the scheme of his philosophy, Spinoza, pursuing the method of science, whether in physical matters or in relation to human nature, completed the scheme with the mystical "intellectual love of God," which, though it did not fall under Spinoza's own description of religion in the ordinary sense of that word, was in fact a form of religion. In other words, his final religion was the outcome of the method of science itself, and contrasted therefore both with the excuses found for religion in the nineteenth century and with the tendency notable in our own day to regard religion as supplying the gaps left by science. Follow science to the end, Spinoza seemed to say, and you arrive at the religion of the mystical vision. The lesson

which the speaker drew was that religion, to be of value, is not only compatible with science, but its outcome.[1]

SPINOZA: THE CHAMPION OF TRUTH

SIR HERBERT SAMUEL said that it was a relief to turn from the turmoil of politics to the calmer atmosphere of philosophy.

The British Institute of Philosophy would be falling short of the duties for which it was established if it did not commemorate this tercentenary of the birth of Spinoza. The man who was condemned as an atheist, anathematized by the Synagogue in which he was trained, ostracized by the community in which he lived, whose works for one hundred years no one dared to quote in public discussions, is being honoured this day in all lands as one of the greatest of thinkers, one of the greatest servants of mankind. Almost all our present-day philosophers derive in some degree their root ideas from his teachings. Whether we are immortal in ourselves is a matter of controversy, but it is certain that we may attain immortality by what we do. Spinoza is still alive to-day in modern thought.

A thinker in earlier centuries had this advantage over thinkers of the twentieth century—he had fewer philosophers to learn about. Kant had this advantage over his successors, that he did not have to spend months and years in studying Kant. Montaigne tells us that his father used to say to him that the reason for the superiority which the Greeks and Romans were considered to have over later times in greatness of soul and in knowledge was due to the fact that they did not have to spend so much of their youth in learning Greek and Latin. But in any case, Spinoza did not make the mistake of thinking that the study of philosophy was nothing more than the study of philosophers. Well acquainted as he was with the teaching of the men who had gone before, he drew his inspiration from the given facts of the physical universe, of life, of thought, and of human conduct. "The mind understands itself better," he said, "the more things it understands in nature." As Dr. Wolf has said, Spinoza's philosophy is based on Reason, Reality, and Religion. Spinoza saw that the supposed distinction between the natural and the supernatural, the separation between the world and God, was a dichotomy that corresponded to no reality in the universe.

There is, indeed, a distinction between the things that we human beings think we understand and the things we know we do not understand; we may call the first natural and the others supernatural; but in fact everything in the universe is in a sense equally

[1] For a fuller statement of this position, see an address on Spinoza which is about to be published by the University Press of Manchester.

natural and everything is equally supernatural. The boundary is between our own knowledge and ignorance, not between the universe and the Deity. Because Spinoza saw this and said it, he was condemned as an atheist. Because he would not discard Reason or reject Reality, he was held to be an enemy of Religion. There runs through his work, in fact, what Dr. Pringle-Pattison has called "an undertone of mystical exaltation," and he was, indeed, in a phrase often quoted, "a God-intoxicated man."

It was thought three centuries ago that religion consisted mainly in historical dogma and ritual, and men tortured and killed each other for the sake of those things. Now we realize that religion is something far wider and deeper and more lasting than these, and so we have established toleration, liberty of thought—the greatest achievement of the modern world, for it opens the door to all else.

Professor Sorley has said: "In Spinoza two great qualities were combined: the logical power which has command of abstract reasoning and can weld arguments into system, and, along with this, the vision of a seer." Further, he was animated by a restless and unconquerable striving towards an understanding of the nature of things. That was a combination of qualities which reappears again and again, century after century, millennium after millennium, among individuals of the Jewish race, and has been able to render great service to mankind.

Victor Hugo has said in a vivid phrase: "Genius is a promontory into the future." The mind of Spinoza juts out from the seventeenth century into the twentieth and on, we may believe, into the unknown centuries to come. He was an unflinching servant of truth as he saw it, and that must have been his strength and his solace.

Surrounded always by animosities, sometimes by dangers, living always in poverty and for years affected by a fatal disease, he was sustained by the faith that through it all he was still the champion of truth. Often in the darkest days he must have thought—

> It fortifies my soul to know
> That, though I perish, Truth is so.

We are right to honour his memory.

THE PLACE OF MATHEMATICS IN THE INTERPRETATION OF THE UNIVERSE[1]

PROFESSOR F. A. LINDEMANN

RECENT advances in physics render a reconsideration of the Place of Mathematics in the Interpretation of the Universe particularly timely. On the one hand, we have the introduction of non-euclidian geometry, which has given rise to much controversy informed or otherwise; on the other hand, we find mysterious forms of mathematics, invented to cope with the quantum difficulties, which so far have escaped metaphysical investigation or criticism. It would seem most desirable that these modes of interpreting reality should be examined from the broader philosophical point of view.

In order to do this it is necessary in the first place to explain in what sense we are using the word Universe. By this word the scientist, and few people other than scientists utilize mathematical methods in their cosmological speculations, means the image or model, built up of familiar concepts or indefinables, which he creates; this forms his so-called "Physical World," into which he endeavours to fit events corresponding with his experiences. He is not concerned to claim any specific reality for this Physical World; his aim will be achieved if a one to one relation can be established between the consequences and predictions derived from his model and all the facts of human experience.

This definition, it is clear, implies a gigantic programme. To take into account every sense-datum would clearly require an immensely elaborate model, far exceeding in complexity any at which we have yet arrived. Whether this will ever be completed we need not here examine. So far, the scientist has been content with a much more modest objective. He makes very little pretence at any quantitative discussion or prediction of the effects produced by the interactions of experiences which form the basis of so large a part of our emotional life. He does not, as yet, offer a quantitative account of the relation between stimuli and sense-data. He has scarcely reached the fringe of any accurate quantitative knowledge in the field, usually subsumed under the word biology.

The only domain within which the scientist's model of the Physical World can make any claim to exactness is in the description of the processes which occur in non-living matter. It is only in Physics in

[1] Lecture given to the British Institute of Philosophy, October 18, 1932.

its broadest sense, which includes all the ancilliary subjects, such as astronomy and chemistry, that the scientist's image of the Physical World has reached any degree of perfection. It is in this region alone that mathematical methods have so far been successfully applied. When therefore we discuss the Place of Mathematics in the Interpretation of the Universe, we need only regard that aspect of the Universe which is susceptible to mathematical treatment, namely, the examination and interpretation of the phenomena and events presupposed to occur amongst non-living entities in the Physical World between which and our experiences we hope to establish the one to one relation which entitles us to describe these occurrences as the facts of observation.

Mathematics is an extremely difficult and abstract subject. From small beginnings it has grown and expanded to such an enormous extent that there is to-day scarcely one man even superficially acquainted with the whole corpus of knowledge. Whether owing to a natural mental restriction or, as seems more probable, inadequate teaching, the average man seldom progresses beyond the mathematical alphabet. In the circumstances it is only right and proper that the dicta of professional mathematicians should be accepted with respect by laymen. On the other hand, it is most important to expose the true functions and sanctions of mathematics and ensure that the weight of its authority is not misused.

It is sometimes forgotten that mathematics is really only a form of symbolic logic. It is a technique which we have invented to render possible in complicated cases quick and accurate quantitative thought. But its function is to compare and measure, to redistribute and rearrange, to combine or analyse, or symbolize, not to create or discover. Starting with a given number of physical assumptions, we can twist and turn them in the mathematical mill until the result is as different from the initial material as the sausage is from the quadruped that walks into the machine. But the validity of the final product is no greater and no less than the validity of the primary hypotheses. A competent mathematician can undertake to pass his initial premises through the most elaborate and complicated logical processes with infallible accuracy. But in the end he can only guarantee that the result follows from the premises no more and no less.

Arithmetic arose from abstracting from heaps of distinguishable objects the property they had in common which we call number. Provided it is immaterial in which order we count our objects, the ordinary rules of addition and subtraction are little more than definitions. The concept of multiplication arises naturally from repeated additions, and the rules of multiplication are merely logical consequences of the rules of addition. The essential point that

distinguishes elementary arithmetic from logic is that an extremely concise and appropriate symbolism has been invented to replace comparatively long sentences, and that once one has developed rules for carrying out definite logical operations, such as multiplication, these can be applied quite generally almost mechanically in all cases without having to consider each new proposition *ab initio*. The concept of multiplication leads naturally to the invention of the new concept, the inverse of multiplication division; and from this we can proceed by obvious and easy stages to such ideas as vulgar fractions, prime numbers, and all the complicated consequences to which these are the prelude.

We thus see exemplified in simple arithmetic the outstanding qualities which characterize all mathematics. We make certain premises about that property of a heap of objects which we call the number, *e.g.* that we can count the objects, and that the order in which we count them is immaterial. From these premises by a simple logical argument expressed in words we derive certain conclusions. These conclusions are valid for any heap composed of any objects. Once they have been established they are true for all time, and we need never bother about them again. They serve as a basis upon which we build further arguments and from which we derive more elaborate conclusions. The second point is that we have developed an extremely convenient shorthand. General characteristics concerning all heaps of whatever objects can be expressed in a few simple symbols. The third point is that a complicated process, which can be expressed in concise symbols and is subject to general rules, assists materially in inventing a new concept, such as multiplication or division, which may serve as a convenient parameter in thinking about or discussing the questions concerned.

If arithmetic concerns the general properties of aggregates which we call their number, algebra may be said to express the general properties of numbers themselves. It is one stage further in generalization. Instead of observing that four times four is one greater than three times five, and five times five is one greater than four times six, we may show, for instance, that any number multiplied by itself is one greater than the number one smaller than itself multiplied by the number one greater. To do this we invent a new symbolism, and prove and fix each type of logical step in terms of the new symbolism in turn. Instead of writing down every time "any number," we write "*a*." It is easy to show if we are dealing with aggregates which obey the laws of arithmetic that any number a_1 plus any number a_2 multiplied by any third number a_3 is equal to the product of the first number and the third number plus the product of the second number and the third number, in other words that $(a_1 + a_2)a_3 = a_1a_3 + a_2a_3$. We have only to generalize and

apply this rule of multiplication to prove our original theorem, which may be expressed in algebraic symbols in the form

$$a^2 - 1 = (a - 1)(a + 1).$$

Just as in the case of arithmetic, new symbols have been invented and new expressions coined to represent each different type of logical argument which can be applied to algebraic quantities. Once a step has been proved it can be enshrined in appropriate symbols, and one need never revert to the proof. In this way an even more gigantic and elaborate body of knowledge than the one we call arithmetic has been built up concerning algebraic quantities. New forms of argument have been elaborated, named, and given symbols, and the nominative of the verb which represents such an argument is frequently developed into a concept as familiar to the mathematician as credit (or perhaps one should say debit) is to the business man.

A branch of mathematics which was developed very early, the relations of which to algebra were only realized some two thousand years later, is geometry. As its name implies, this subject in its earliest days was connected with surveying. An enormous number of complicated and elegant theorems concerning geometrical figures drawn on plain surfaces were discovered in the Hellenic academies and collected in the works of Euclid. It was found that the simplest model which we could imagine to represent the Physical World was constructed in such a way that the relations which we call lengths, surfaces, and so on of the objects approximated closely to the relations between the corresponding quantities and the figures of the Euclidian geometry. This is not surprising when we remember the utilitarian origin of this branch of knowledge. It was only in the sixteenth century that it was shown that one could establish an exact one to one relation between geometrical propositions and corresponding algebraic theorems. This is of course only natural, since both of them merely represent trains of reasoning. The algebraic symbolism is so flexible that it is easy to identify Euclidian axioms and postulates with corresponding premises stated in algebraic form. Any geometrical theorem represents the results of an argument based on the Euclidian premises. It is obviously possible to represent the identical argument in algebraic form so that an exact correspondence can be established. We shall return to this point at a later stage.

We may now proceed to the applications of mathematics to science. Perhaps the simplest way to illustrate its function is to consider one of the earliest historical cases, namely, Galileo's observations about the rate at which bodies fall. In order to keep this description within reasonable bounds, we will omit the constant repetition of phrases to indicate that the considerations apply to the Physical World

which we have constructed as a model between which and our sense-data we hope to establish a one to one relation. In other words, we shall use the ordinary language of everyday life, despite its erroneous implication that we claim to be observing and describing reality.

Galileo found that a body fell four feet in the first half-second, sixteen feet in the first second, thirty-six feet in one and a half seconds, sixty-four feet in two seconds, and so forth. Without any mathematics such a series of observations could at most be used to construct a table. It might be useful to anyone who wished to know when to release a stone from the battlements in order to strike a perambulating sentry in the moat below, but could scarcely be employed to gain a deeper insight into natural phenomena. Let us consider the mathematical line of approach. Any scientist worthy of the name given the above set of figures will observe that, whilst the times are in the ratios one, two, three, four, the distances travelled are in the ratios one, four, nine, sixteen. Even a very meagre familiarity with mathematics will enable him to recognize the latter ratios as the squares of the former. He will be able, therefore, to represent the statements made above (which took three lines to express) by the simple formula $s = 16t^2$, s being the distance travelled measured in feet and t the time measured in seconds.

But this symbolic abbreviation is only the smallest part of the advance made. In the first place, he has found an extraordinarily convenient mnemo-technical symbol which enables him to visualize the four experiments at one time. In the second place, this expression implies that a similar simple relation between the distance the body falls and the time of fall subsists for all possible times and distances. This is, of course, a hypothesis which must be tested by experiment. Exactly how many confirmatory tests are necessary before we can rely upon our formula we need not here examine. The main point is that without the formula we should have found it extremely difficult, if not impossible, to formulate the hypothesis and discover the law. In the third place, the fact that we have been able to express the observation in mathematical form enables us to derive by the quasi-mechanical processes of mathematics consequences which could only be discovered by many hours of labour if one confined oneself to purely verbal forms of statement and reasoning.

It is obvious, for instance, that the velocity of the falling body is continually changing. But it is interesting to know at what speed it is moving at each moment. The velocity is the rate of change of position. It may be represented as the increment in the distance for a given increment of time. Since the velocity is continually changing, and we wish to know its value at a given moment, we must make this increment of time as small as possible. Let us without specifying

at present its exact value call it dt. If the distance travelled in time t is $16t^2$, it is clear that the distance travelled in the time $(t + dt)$ is $16(t + dt)^2$. The ordinary rules of algebra, *i.e.* the quasi-mechanical processes symbolizing trains of argument previously established, tell us that this is equal to $16t^2 + 32tdt + 16dt^2$. Hence the increment in distance is $32tdt + dt^2$, which has been covered in a time dt. In other words, the rate of change of distance travelled, *i.e.* the velocity, is $32t + 16dt$. As we have seen, the smaller we can make dt the more accurate will be our result. We may therefore consider it to be vanishingly small, and we find that the velocity at any given time t may be represented by the simple expression $v = 32t$. In a similar way the rate of change of velocity, the acceleration, may be calculated, and is found to be independent of the time, namely, 32 feet per second per second.

It need scarcely be pointed out that this process of deriving the rate of change of position represents a train of reasoning which is constantly recurring. It has therefore been given a symbolism and a name in algebra, and the process has been stereotyped. It is known as "differentiating" s with respect to t. The differential calculus is that branch of mathematics which deals with all the complications and ramifications which arise when one juggles with arguments of this type.

The example we have discussed represents one of the very simplest instances of the application of Mathematics to the Interpretation of the Universe. It need scarcely be said that it does not recapture the slow, groping steps by which progress must inevitably be made. When the number of scientists was small and means of communication were difficult and uncertain, years and frequently generations interposed between the various steps of the argument. Sometimes new trains of reasoning, *i.e.* new forms of mathematics, had to be invented, and observations had to be sorted and sifted before they could be forced into mathematical form. Kepler's Laws expressed with almost perfect accuracy the observed motions of the planets in geometrical terms, but it was only some eighty years later that Newton was able to show that these expressions themselves could be derived from yet simpler and more general fundamental assumptions. Even to-day, when the number of men of science is so much greater and when each individual's discoveries are broadcast to the world by the various scientific periodicals within a few months of their being made, a period of nearly thirty years intervened between the enunciation of Balmer's Law, which gives a simple mathematical expression for the frequencies of the spectral lines of hydrogen, and the proof by Bohr that this formula would emerge if one made certain presuppositions about the structure of the hydrogen atom and introduced a definite assumption restricting the general laws of

classical mechanics in discussing the interactions between the component parts.

In principle the process is, however, invariably the same. It is only the order in which the steps come which appears to differ. Sometimes, as in the case of Galileo, the observations come first, they are represented in a form susceptible of exact quantitative logical treatment, *i.e.* by means of a mathematical formula; this formula, when necessary checked by extra observations, is subjected to mathematical analysis, new generalizations are extracted from it, and these in turn are tested by experiments designed for this purpose. Sometimes the second process strikes the public imagination either because the connection between the new experiments and the first is remote, or because the quantities in question are small. In this case we have impressive predictions, such as occurred when Adam and Leverrier prophesied the position of an unknown planet before it was seen by the human eye. Actually, all these processes are but links in the chain of progress; it is in principle immaterial upon which link the beam of the searchlight of publicity is directed. Kepler formulated expressions which subsumed the motions of the planets. Galileo formulated laws of motion which expressed the rate at which bodies fell in quantitative terms. Newton generalized these laws of motion and, inventing a mathematical symbolism which enabled him to handle and discuss succinctly yet accurately the results of Kepler and Galileo, succeeded in proving that the same fundamental assumptions would explain quantitatively both Galileo's observations on the rate of falling bodies and Kepler's observations on the rate at which planets travel round the sun. Adams and Leverrier showed that slight discrepancies in the motions of the outer planets could be explained without abandoning Newton's general hypotheses, if there were some planet, hitherto unknown, at a certain point whose attraction distorted the simple trajectories which had been expected. The observation was made and the planet was found in the predicted spot. Had it not been, Newton's general laws of motion would have had to be modified or abandoned.

Sometimes a predicted result is not confirmed. This may be due either to an inaccuracy in the experimental material upon which the calculation was founded, or to some inadequacy in the presuppositions and generalizations upon which the justification of the train of reasoning depends. It should never be due to an error in mathematics, *i.e.* to a fault in our train of reasoning. For the methods of mathematics are so well defined and the symbolism is so transparent that it should be possible for any competent man to check and recheck the calculation. When experimental evidence conflicts with scientific prediction based upon accurate observations, we are therefore compelled to re-examine the generalization upon which the

prediction was based. Such a generalization would, of course, never have been taken seriously had it not been in accord with the great mass of experimental evidence. Usually re-examination merely brought to light small correction terms, whose effect was negligible in the earlier experiments, but which cannot be left out of account in the particular experiments which conflict with the law as previously enunciated.

It was Einstein who first pointed out that, at any rate, some types of contradiction between theory and experiment may be due to the peculiar indefinables we have chosen in terms of which we construct our "Physical World" rather than to the Laws of Nature, which we have assumed to hold in this "Physical World." In the "Physical World" one is obviously only concerned with concepts and quantities susceptible of physical definition and measurement. Numerous experiments have shown that it is quite impossible for an observer on the earth, which is notoriously moving at a high speed relative to the vast preponderance of material objects in the Universe, to observe any trace of this motion save with reference to the surrounding objects. There are two interpretations which may be placed upon this result. The first, flattering to the vanity if not to the intelligence of the observer, is that whilst everything else is moving we alone are at rest. It is an explanation which would have commended itself to Chantecler upon his manure heap, but against which we need scarcely argue here. The second explanation is that there is no sense in discussing absolute motion in the Physical World, but that relative motion, *i.e.* the rate of change of position of objects relative to one another, the sole type known to mechanics, is the only observable quantity of this type which there is any meaning in using in our description of the Physical World. If we stick to our axiom that there is no sense in introducing into this model of the Physical World concepts or quantities other than those which can be observed and measured, it is easy to show that a profound change is necessary in the somewhat naïve conceptions of space and time which sufficed for Newton or Galileo. The interval between two events in the Physical World cannot be split up uniquely into a spatial interval and a temporal interval. A relation between the spatial aspect and the temporal aspect emerges which depend upon the velocity of the observer relative to the object observed. In our Physical World we have always had the four variables, length, breadth, height, and time. All of them may change in the interval between two events. It is no more possible to sort out the spatial and temporal aspects, save with regard to some conventional point of view, than it is to differentiate between the left and right side of a sheet of paper. As this distinction depends upon the position of the observer relative to the paper, so the space aspects and time

aspects of an interval between two events depend upon the motion of the observer relative to the objects observed. Just as each observer decides for himself what is right and what is left, so is each observer entitled to utilize in describing events in the Physical World the particular dichotomy of space and time which he observes.

As we have seen, mathematics scarcely enters into this, the special theory of relativity. The leading ideas can be apprehended and the formulae understood by anyone acquainted with quadratic equations. The algebra of the general theory of relativity is much more difficult. Encouraged by his success in removing certain difficulties which had appeared in our picture of the Physical World, because we had taken for granted that the simple dichotomy which each of us perceives in space and time must be the same for everybody, Einstein proceeded to investigate whether there were not other equally simple and obvious presuppositions contained in the model which we call the Physical World which were perhaps equally unjustifiable.

We have shown above that a geometrical proposition represents a train of reasoning carried out according to certain rules connecting certain *a priori* axioms with a certain definite result. As we observed, these axioms and the rules of reasoning applicable to them were originally derived by abstracting certain properties inherent in plain figures. Whilst, like any other quantitative train of reasoning, the proposition can be stated in algebraic terms, it may therefore often be even more conveniently expressed as a relation between geometrical figures or parts thereof. If one considers geometrical figures drawn upon a spherical surface in lieu of a plain surface, one Euclidian postulate loses its validity. Apart from this, all the same trains of reasoning can be carried through and a number of interesting propositions can be stated. Just as before, these trains of reasoning can be expressed equally well in algebraic terms—in fact, owing to the inability of many people to think in three dimensions the algebraic mode of expression is usually preferred. All that is required is that an alteration corresponding to the alteration made in Euclid's fifth postulate be made in the algebraic equation which takes account of that presupposition in our argument.

To Euclidian plane geometry in two dimensions there corresponds a Euclidian solid geometry in three dimensions. Everybody knows or thinks he knows what this means. Naturally, the theorems of Euclidian solid geometry can be stated in algebraic language. If in our algebraic equation we make a corresponding change to that which was required in order to proceed from two-dimensional geometry on a plane to two-dimensional geometry on a curved surface, we arrive at a solid geometry which bears the same relation to Euclidian solid geometry as geometry on a curved surface does to

ordinary plane Euclidian geometry. The same sort of modifications occur in the theorems and the same similarities. Just as one can have an infinity of modifications in two-dimensional geometry according to the type of curved surface on which one can imagine the figures drawn, so one can have an infinitude of variations in non-Euclidian solid geometry. Non-Euclidian geometry is just as true and just as real as Euclidian geometry. In both of them a theorem is merely a symbolic form of stating the results which arise by arguing according to certain definite rules on certain stated premises.

As we emphasized at the outset, it is the business of the scientist to design or invent a Physical World between which and his experiences he can establish a one to one relation. All such models hitherto have been described in a framework of space and time. Gauss was the first to realize a hundred and twenty years ago that there was no *a priori* necessity to employ a Euclidian space-time framework. Observations, accurate by the standards of those days, showed him that the one to one relation between model and experience could be achieved without extra hypotheses if a Euclidian framework was employed. But there is no more reason to do this, except that it is empirically convenient, than there is to draw a map on a Mercator projection rather than upon any other. In drawing the plan of a town, or even the map of a county, the Mercator projection is perfectly adequate. The distance between Fourth and Fifth Avenue in a plan of New York is sensibly the same over their whole length. But if these two streets were continued indefinitely we should find that they approached one another. Once again we have the choice of two alternatives. We can draw them on our map on the Mercator projection as curved lines meeting at a certain distance and explain that though they run perfectly straight there is some mysterious force pulling them together as we recede from New York; on the other hand, we can renounce the arbitrary use of Mercator's projection and draw our map on a globe, in which case we need not introduce any mysterious force. In principle, either method is permissible. After all, we are only concerned to establish a one to one relation between the Physical World and our experiences, and if there are two different models which yield this result, there is no reason to say one is right and the other is wrong. To construct one's Physical World in a non-Euclidian framework enables one to dispense with the mysterious force of gravity which draws bodies towards one another at a distance. In the same way to draw our map upon a globe enables us to dispense with the mysterious force which it was necessary to assume in order to explain why lines intended to be straight approached one another when mapped upon Mercator's projection. But if the Geo-planarian does not shrink from

supplementary hypotheses, he can travel round the world without injury to his convictions.

Some of the proposals which have been put forward to cope with the so-called quantum anomalies make much more radical demands upon our faith. As everybody knows, some thirty years ago our picture of the Physical World appeared full of promise. Built up neatly in a Euclidian space-time framework with the phenomena linked together by the "Laws of Nature," it seemed destined with a little more spit and polish to fulfill all requirements. As we have seen, the introduction of the Principle of Relativity merely corresponded to slight distortions imposed upon the framework. They could be likened to the addition of correction terms. The metaphysical importance of recognizing that the framework, so often regarded as fixed and immutable, was really conventional, and could be twisted and distorted as desired, was of course great. But changing it did not demand any change in our system of logical thought, nor did it produce any hiatus in our mathematical methods. This can scarcely be said of modern quantum mechanics.

It is not possible here to discuss this question at length. It seems appropriate, however, to examine some of the proposals which have been made, since they appear in some quarters to indicate a misconception as to the proper place of mathematics in interpreting the Physical World.

Obviously, in inventing our Physical World, we have to start with certain indefinables which we imagine we understand. It is usual to take for these the concepts of length, time, and mass, in terms of which Newton's generalizations were expressed. Thus an observation would be described by saying that a body of mass m travelled from a point A to a point B in a time t. In one's description various derived quantities frequently appear, such as the rate of change of position which, as we have seen above, we call the velocity, a quantity proportional to the mass and to the velocity, which was called the momentum, a quantity proportional to the mass and the velocity multiplied by itself, which was given the name energy and so forth. One of the most important of these derived quantities is proportional either to the momentum and to the length of path or, if one prefers to express it so, to the energy and to the time. This quantity defined as the product of two such conjugated co-ordinates p and q was given the name action. It is of extreme interest because, in a Physical World in which Newton's generalizations hold, all processes can be subsumed under the statement that the path actually followed by a particle will be the one for which the value of the action transferred is a minimum. The first form in which the Quantum Theory was stated implied that this quantity, the action, was atomic, *i.e.* that it could only be transferred in units of finite size.

Such a proposition naturally implies a radical change in our picture of the Physical World. For, whilst the action was believed to be capable of varying continuously, its value could have a definite minimum and the corresponding path traversed would have a perfectly definite shape. If, on the other hand, the action was only capable of having certain definite values, each differing by one atom of action from the last, then we should have a series of steps instead of a continuous curve, so that there would be no defined minimum but only a region within which the action would have its lowest value; consequently there would be no predictable path which the object would traverse, but only a certain part of space within which one would expect to find it. For experiments on a large scale this would make very little difference provided the atom of action was small compared with the action transferred in the experiment.[1] On the other hand, it sets a finite limit to the accuracy of observation or experiment. For every experiment implies a transfer of action, and consequently no experiment can be carried out which would correspond to a transfer of less than one unit of action.

The recognition of the apparent atomicity of action has quite unexpected repercussions on our whole physical outlook. As we have seen, there is no sense in introducing into our model of the Physical World quantities which are in principle unobservable, *i.e.* describing the Physical World in terms which have no physical meaning. In the classical, as also in the relativistic physics, it was always taken for granted that positions and velocities were in principle observable, and that one was therefore entitled to employ these concepts in describing the Physical World. The atomicity of action destroys this illusion. Any statement made about the position of a particle is meaningless unless it has some observational warrant. But if an observation has been made, the momentum of the particle has been affected. For prediction or description we must know both position and velocity. Neither can be determined without interfering with the other.

The best solution might be to endeavour to describe the Physical World without introducing such concepts as position and velocity. With our present-day mental equipment such an attempt would seem foredoomed to failure. The concepts of space and time have been welded into our habits of thought so firmly that it is almost impossible to think or speak without employing them. The alternative is to continue to describe the Physical World in terms of space and time, but to take account of the fact that each spatial observation implies a change of momentum and each measurement of time

[1] It is, of course, extremely small. An oscillation of the balance wheel of a watch involves some 10^{25} atoms of action. The number of drops of water in the oceans of the World is of the order 10^{25}.

involves a change of energy. As we have said, the exact amount of this change in any particular case cannot be predicted. But it has proved possible not only to determine the average amount, but even to find an expression which gives the probability of producing a change of a given amount in the one co-ordinate by observing to within given limits of accuracy the conjugated co-ordinate.

The laws of classical physics neglected this factor. If we wish to achieve a one to one relation between observation and our model of the Physical World, it must be taken into account. When this is done, one finds somewhat modified laws of nature which subsume both the classical physics and the quantum anomalies.

It is sometimes believed that it is unnecessary to seek for any such explanation in physical terms. This attitude scarcely seems conducive to the progress of science.

It is perfectly true that an elaborate and complicated system of mathematics has been built up which subsumes within its formalism all the experimental data hitherto discovered in the domain. It is important that it should be made perfectly plain that this is all that has been achieved. Unfortunately, it is sometimes believed that the new quantum mechanics can be derived from the classical mechanics, that our difficulties were merely due to our having falsely applied the commutative rules of multiplication. Nothing could be further from the truth.

To explain how this error arose we must return to first principles. As we have said, the quantity which we call action is proportional to the positional co-ordinate q and to the dynamical co-ordinate p. In the symbolism of ordinary algebra this is expressed by saying that it is proportional to qp. This implies that the positional co-ordinate can be represented by a number which tells us how many times greater it is than our conventional unit of length, *i.e.* how many times we must add our unit of length together to attain the length q. The same is true, *mutatis mutandis*, of the momentum co-ordinate. By definition the multiplication of these two numbers gives us the number of times we must add together our unit of action to attain the total action concerned. Since p and q are but numbers, it cannot matter whether we add q, p times to itself or p, q times to itself; the result is independent of the order of multiplication.

In the quantum mechanics there is substituted for this ordinary commutative algebra what is perhaps unhappily called non-commutative algebra. This latter form was developed by mathematicians searching for a technique to deal with arrays of numbers considered as units. As an instance of such an array one might imagine one had a number written upon each square of a chess or draughts board. If one chooses, one can of course define the addition of two such arrays as the superposing of one upon the

other; in this sense, for instance, one might say one could add a game of chess to a game of draughts by putting each chess man from the chess board on to the appropriate square of the draughts board. In a similar way one can without too much strain upon one's ordinary interpretation of the words define subtraction or differentiation or multiplication of such an array by an ordinary number as the process of carrying out the appropriate operation upon each term in its own appropriate place.

In the first instance these arrays or matrices were utilized to represent the coefficients which one had to employ in transforming from one system of co-ordinates to another. Arranged as they were in a conventional chess-board pattern, it was easy to identify which co-ordinate was to be multiplied with which coefficient in order to complete the operation. It was found that the effect of carrying out first one transformation and subsequently another could be achieved without actually carrying out the two operations by utilizing a new matrix whose terms were formed according to a definite rule by combining certain terms of the matrix corresponding to the first transformation with certain terms of the matrix corresponding to the second. The mathematicians who discovered this process considered that since the new matrix thus produced represented the effect of operating with the two others in turn, it was appropriate to call it the product of those two matrices. This is somewhat misleading. For such an operation conducted between two arrays of figures has no relation to the well-defined concept of multiplication. It is no more possible to multiply two arrays of figures together than it is to multiply a game of chess with a game of draughts.

In view of the conventional nature of the rule by which the figures in the horizontal lines of one array are multiplied by the figures in the vertical columns of the other array, it is clear that the result achieved if one "multiplies" the first array with the second array will in general not be the same as the result obtained by "multiplying" the second array with the first. Since in dealing with such arrays mathematicians adopted the name and symbol of multiplication for this highly conventional operation, they were naturally led to the name non-commutative algebra for the processes dealing with these quantities.

Nobody could take exception to the invention of any form of mathematics; at most one might ask that the names and symbols selected for the various operations should be chosen with anxious care so as not to mislead the layman. In this instance, however, the deceptive term "multiplication" happily led to the most fortunate results.

It was known that some physical configurations, such as the atoms and molecules, could be characterized by the spectral lines emitted

by them under suitable conditions of excitation. The frequencies of these spectral lines, or as we should say the energies, had been arranged in regular sequences so that the complete spectrum in the simpler cases could be represented as a set of spectral series. In this respect, therefore, one might recognize a certain resemblance between what we actually know about the atom, *i.e.* the frequencies of all the spectral lines it can emit, and an array of figures or matrix. On the other hand, it was known that for such systems the ordinary laws of mechanics failed, though they were of course valid in macroscopic experiments. In searching for new laws of mechanics physicists could only be guided by analogies. It was a fortunate coincidence that the application of the laws of non-commutative algebra to the formulae of the old classical laws of physics should have led to results compatible with experience. It is important, however, not to fall into the error that the quantum mechanics can be derived from the classical laws of motion. In classical physics the action can be represented as the product of q and p because it is proportional to q and to p. There is no justification for extending this definition, that the action can be written in the form qp, to a new type of algebra in which the symbol ordinarily employed to represent multiplication bears no relation to the concept of proportionality. Nor is there any logical reason to expect that rules which have proved valid in describing macroscopic phenomena can be replaced by others which are represented by formulae which look the same when written on a sheet of paper, but in which the symbol which usually stands for genuine commutative multiplication is taken to represent the conventional process which was invented for handling arrays of figures and decorated with the somewhat misleading title "non-commutative multiplication."

As we have said, every algebraic process merely symbolizes a certain train of reasoning. Commutative multiplication represents repeated additions in the case of that property of countable aggregates which we call their number. Non-commutative multiplication represents a totally different process carried through with arrays of numbers according to a peculiar convention. It corresponds to quite a different train of argument which bears scarcely any relation to the train of argument represented by commutative multiplication. There is thus no logical justification for the substitution of this train of argument for the other in the fact that they have both been given the name multiplication. Nor is the difficulty diminished when we remember that it is necessary to assume that the difference between the two non-commutative products is an imaginary quantity.

It is well to make it perfectly clear that all we can claim for the analogy is that it was fortunate enough to inspire a successful guess.

Quantum mechanics has no claim upon our acceptance beyond the pragmatic one that it leads to the right results. Nor for that matter has the classical mechanics any other sanction. There is, however, this difference, that the classical mechanics could be expressed in terms of physical concepts and the implications of each step in the argument apprehended.

There are, it is true, people who are content to find salvation in a system of symbols without feeling any need to seek any physical substratum for their operations. They are satisfied with a Physical World composed of little black marks on a white sheet of paper. Such an outlook seems unlikely to be fruitful. Kepler's laws subsumed in simple symbols the motions of the planets. Nobody would claim that Newton should have been content with these elegant generalizations. Progress usually comes when a physical meaning is given to the arid formalism of mathematics. It is when mathematics is employed to clarify one's thoughts rather than to escape from them that advances in the interpretation of the universe are made.

The advent of non-Euclidian geometry and of non-commutative algebra are interesting instances of the introduction of unusual forms of mathematics into physics. In the first, all the rules and laws which had been tried and proved in our model of the Physical World were maintained. Only the framework was slightly distorted; the map remained, though drawn upon a somewhat different network of lines of longitude and latitude. This cannot be said of the introduction of non-commutative algebra. The whole logical processes upon which the system was based have been thrown overboard. It is as though islands on the map had been drawn with discontinuous coast lines. True, it leads to results confirmed by experience. But we cannot be satisfied without endeavouring to find out why this is so. Those who have introduced it have made a great step by showing that this curious mathematical convention can be usefully employed to represent the facts of experience. It still remains to translate the premises implied by the success of this peculiar and, as it would seem, arbitrary form of reasoning into the language and concepts of the physicist.

PHYSICS AND PHILOSOPHY[1]

SIR ARTHUR S. EDDINGTON, F.R.S.

I THINK it will be agreed that there is a domain of investigation where physics and philosophy overlap. There are branches of philosophy which do not approach the subject-matter of physics, and a great part of the work of practical and theoretical physicists is not aimed at extending our knowledge of the fundamental nature of things; but questions which concern the general interpretation of the physical universe and the significance of physical law are claimed by both parties. I suppose that ideally the physicist should be allowed to elucidate his own universe up to a point, and then hand it over to the philosopher to ascertain its exact status in relation to a wider outlook. But in practice we have not sufficient confidence in one another, and we both make raids over the border to suggest all sorts of ways in which the other fellow may be deceiving himself and us. The fact is that in approaching the more fundamental problems of science the physicist finds it necessary to adopt a more philosophical outlook than is habitual to him; and if the philosopher wishes to handle results ascertained scientifically he must enter to some extent into the scientific outlook.

I would like to raise one question which affects our co-operation. A feature of science is its *progressive* approach to truth. The kernel of the advances achieved by one theory is preserved in its successor, although the outward shape is often radically different. Is there anything corresponding to this in philosophy? Does it recognize and give appropriate status to that which is not pure truth but is on the way to truth? It is essential that philosophers should recognize that in dealing with the scientific conception of the universe they are dealing with a slowly evolving scheme; I do not mean simply that they should use it with caution because of its lack of finality; my point is that it necessarily makes the scientific aim somewhat different from the philosophic aim, and I am not willing to concede that it is necessarily a less worthy aim.

It would be no aid to science if philosophers enforced on us their glimpses of pure truth some centuries before our scheme was ripe for them. Perhaps if it had been guided by philosophers, or a certain school of philosophers, physics would have been relativistic long before Einstein; but I feel sure that physics would have been in a more backward state than it is now if it had never passed through

[1] Lecture given to the British Institute of Philosophy, November 15, 1932.

the non-relativistic phase of the nineteenth century. To give a more recent illustration, Professor Whitehead's unorthodox theory of space was largely dominated by the axiom that space must serve as the basis of uniformity underlying our measurements; the very existence of coherent physical measurement implies such a basis of uniformity. I believe that there was an essential truth in his outlook, and that in this respect the insight of the mathematical philosopher was deeper than that of the physicists at the time. But coming a few years too early, it led Whitehead to reject the Einstein theory; he assumed that space must be uniform since it is the very basis of uniformity. Physicists, however, continued to develop the theory of the non-uniform space of Einstein, and we can now see how to impose the condition that Whitehead half foresaw. In fact, the necessity for a limited degree of uniformity sufficient to make spatial measurement possible leads to interesting modern developments.

So when, after laborious research, physics arrives at "revolutionary conclusions" which philosophy claims to have known from its cradle, there are two versions to the story. One is that the physicist is a workman of obstinate disposition who would have got on much faster if he had attended to the advice of philosophers. The other is that the philosopher is an officious spectator who keeps bothering the workman by handing him tools before he is ready to use them. I daresay that, as is usual in such cases, the truth lies somewhere between the two versions.

My main theme must be the *physical world*, that is to say, the world that stands revealed by investigations (both practical and theoretical) according to the recognized methods of physical science. You will see that I define it in a way which makes it the special property of the physicist. I contrast it with the familiar world, with its illusions and subjective interpretations which comes spontaneously into the mind as the result of habitually using our eyes and other sense-organs. Broadly speaking, the familiar world is the problem, and the physical world is the physicist's solution of it.

It is well known that for a long time the physical world and the familiar world have been becoming more and more dissimilar, but it is only in the present century that the difference has become radical. As the result of two great theories—the relativity theory and the quantum theory—the familiar world and the physical world have become entirely distinct. Those mental impressions of things, which form themselves into the familiar world, provide the *clues* which we weave together so as to arrive at inferences about the physical world. *A priori* we have no more expectation of finding resemblances between objects in the familiar world and objects in the physical world than of finding a resemblance between a clue and a criminal. It is true that some points of resemblance are found

to exist, presumably because life would be too perilous if our mental conception of our environment failed to maintain a certain amount of correspondence with its physical characteristics; but if natural selection has seen to it that the correspondence is sufficient for our more urgent needs, it is not to be depended on; and no detail of our mental picture is accepted as true of the physical world unless its truth is confirmed independently by scientific research.

It is evident that the connection between an object in the physical world and its counterpart in the familiar world must be very remote. We do not understand the whole connection, but we know enough to realize its indirectness. We are cognizant of an object in the physical world only in so far as it broadcasts light waves, or pressures, or similar signals through an intervening medium. These signals are transmitted in altered form along nerves to the brain. All the characteristics of physical objects must be coded into signals of this form before the mind has the chance of becoming acquainted with them. The man who, on receiving a telegram, imagines that the handwriting is that of the sender, betrays complete ignorance of the nature of the transmission. We often make equally absurd mistakes with regard to the messages received by our minds from the external world. The messages as we receive them are dressed up with conceptions such as colour, substance, spatiousness. This dress is no part of the external world; it is put on when the message arrives, for the transmitting mechanism by its very nature is incapable of conveying such characteristics. I am inclined to treat *time* as an exception—the one conceptual characteristic of the physical world with which we may have direct acquaintance. I do not know how direct is the contact of the mind with physical time when we experience in our consciousness the going on of time, but at least there is no evident intervention of a long chain of physical transmission.

A few years ago I had occasion to write:

> "Mind is the first and most direct thing in our experience; all else is remote inference."

Judging from the criticisms, this seems to have horrified the philosophers—even those who on the whole dealt very kindly with my views. The condemnation seemed unanimous, and my remark was evidently looked upon as a well-known elementary blunder. On the other hand, I have never heard it questioned by a physicist. Many would at once recognize it as the proper scientific view; those who had not previously reflected on the position would, I believe, concede it after a few moments' thought. It would almost seem that this is a fundamental cleavage between physicists and philosophers (or a prominent school of philosophers). If so, it is important that it should be cleared up. I confess I fail even to conjecture what the philosophers have in mind.

I take it that they do not reject the scientific method altogether. They were not rebuking a scientist for being a scientist, but for trespassing on philosophy. I recognize that there must be aspects of the external world which are necessarily inaccessible to physical methods of investigation. In modern theory the physical world is so formulated that it leaves the intrinsic nature of objects undetermined, and so affords full scope for supplementary investigations of this kind. But when we find it stated that qualities, such as colours, sounds, tastes, etc., "can with equal truth be described as our sensations or as the qualities of actual things that we perceive," it seems to me that the philosopher here is not supplementing physics, but simply denying physics. I can understand that a philosopher may wish to assert that when we experience the taste-of-an-apple there must be something in the external world that may appropriately be called taste for us to experience; but wherever the taste in the external world may reside, it certainly does not reside in the apple. When I am asked to believe in an actual apple with an actual taste in it—or an actual dentist's drill with an actual pain in it—I can only answer that science made up its mind long ago that the relation of the actual objects to our sensations was not of that simple kind.

I will assume, then, the scientific view that our problem starts from data which are contained in the minds of conscious beings, and that all we assert of a physical world external to ourselves must necessarily be derived by indirect inference. This, of course, applies to our own brain-cells; although they seem to be in direct contact with the mind, we only get to know of their existence by the usual circuitous route, by light-waves, etc., leading to the extremities of nerves, then along the nervous system to the brain (someone else's brain).

I imagine that the problem of interpreting these clues would be altogether indeterminate, and theoretical physics would never have arisen, were it not that certain regularities are noticed in our sense-data. The sense-data form a cryptogram which the physicist deciphers by studying the recurrencies. The regularities are analysed into laws. The regularities thus provide us with the laws of physics, and what is still more important they provide the rules of inference. When a law of physics is accepted it becomes available as a rule for the further decipherment of the cryptogram.

There is often a tendency to divide our assertions about the physical universe into "hard facts" and "theoretical conjectures." There is no such separation. For example, in my own subject, astronomy, there are no hard facts about the celestial bodies. The only phenomena an astronomer can observe and measure are phenomena occurring in his observatory. This has been translated into knowledge

of an extra-terrestrial universe by giving to the observational results a theoretical interpretation.

The problem of science is to discover the scheme underlying the regularities in our sense-data. Since the regularities appear in the minds of all men, the scheme is presented as something linking together different minds—an external world. By defining our method we limit the subject-matter of physics to the study of regularities. If anyone is interested in other aspects of our sense-data or of the consciousness in which they reside, he is at liberty to pursue them; but so far as physics is concerned we drop everything that is inessential to the elucidation of the regularities and recurrencies. A feature of progress has been that for this purpose much of our sense-data proves to be redundant. We can, for example, drop the sense of hearing, for it only indicates regularities which can equally well be discovered by our other senses.

With the reduction of the types of sense-data to a minimum, there has been a parallel unification of the physical world. One type of regularity in the physical scheme suffices—instead of a distinct type for each of our senses, with perhaps additional types corresponding to electric and magnetic senses which we do not possess but presumably might have possessed. This dropping of a variety of types of sense-data is also responsible for the wide gulf that now exists between the familiar world and the physical world.

Writing this lecture on an autumn day, I feel myself in a familiar world whose most conspicuous feature is colour. There is no colour in the physical world. I think that is the right way to put it. It is true that each colour is represented in the physical world by a number. Similarly I am represented at the telephone exchange by a number, but it would not be true to say that I am part of the exchange. To put it another way, there is nothing in the accepted description of the physical world which owes its place to the fact that we have a sense of colour. Everything we assert can be verified by a colour-blind person, and indeed most of our more accurate knowledge is ascertained through the medium of a colour-blind photographic plate.

When we have got rid of all senses which are superfluous like colour-sense, what have we left? We can do without taste, smell, hearing, and even touch. We must keep our eyes—or rather one eye, for there is no need to use our faculty of seeing in perspective. The eye need not have any power of measuring or graduating light or shade; I think it is sufficient if it can just discriminate two shades, so as to distinguish whether an object is present or absent.

With this reduced equipment we can still recognize geometrical form and spatial magnitude. We can recognize that one object is round and another square, that one is apparently larger than another.

Twenty years ago the position had been reached that form and spatial magnitude were the only features in our familiar picture which had to be transferred directly into the physical world. You will see why at this stage physics had become so largely geometrical in conception. The ultimate data which it had to work on were exclusively geometrical. I think that it was ordinarily accepted that form and size as applied to objects of the physical world meant just what they did when applied to objects of the familiar world. They were to be understood quite literally.

By limiting the sensory equipment of our observers, we do a great deal to prevent their quarrelling. For example, by removing their ears, we stop the wrangling of the musical critics. I do not say that they are wrangling about nothing; but, whatever it is, it is not relevant to the scheme of regularity of which the physicist is in search.

But it was found that the observers were still quarrelling, even when they had only form and size to quarrel over. So in 1915 Einstein made another raid on their sensory equipment. He removed all the retina except one small patch. The observer could no longer recognize form or extension, but he could tell whether two things were touching or not—whether two points were distinct or in apparent coincidence.

If you read about Einstein's theory, you will often find references to a peculiar person called "the observer"—the man who is always tumbling down lifts or getting transported by aeroplanes travelling at 161,000 miles a second. Now you have a picture of him. He has one eye (his only sense-organ) which is colour-blind. He can distinguish only two shades of light and darkness, so that the world is like a picture in black and white. The sensitive part of his retina is so limited that he can see in only one direction at a time. I should mention that we allow him any number of assistants equipped like himself, so that they can keep watch on different parts of an experiment simultaneously and compare notes afterwards. We have deprived him of a sense of touch, so he can scarcely do the experiments himself. We do the experiments and let him keep watch. The point is that the whole of our knowledge of the physical world as it is conceived to-day in physics can be demonstrated to him. If we cannot convince *him*, we have no right to assert it.

I will not stop to justify this in detail. But you will see that it is not intrinsically absurd, because we have left the observer power to see when a pointer coincides with a graduation on a scale. Practically every exact physical measurement resolves itself into a reading of this kind. Thus the observer will have no difficulty in deciding questions of exactitude; he will have more difficulty in keeping check of the general course of what we are doing in the experiment, but with the aid of his numerous assistants he can manage this.

Thus the elimination of redundancies in our sense-data has left us a cryptogram consisting entirely of observed coincidences. Einstein's general theory of relativity was based on the principle that the known data are always expressible as coincidences or, as it was technically expressed, *intersections of world-lines*. I have tried to express the same idea by my catch-word *pointer-readings*. Clearly, any inference which we draw must be of such a character that it is invariant for any transformation that does not alter the intersection of world-lines. (*I.e.* that does not turn intersections into non-intersections, or *vice versa*; lines in three or four dimensions do not usually intersect at all.) If our inference does not fulfil this condition, we have evidently inferred more than the data can possibly warrant. It is well known that the recognition of this principle of invariance led to a very important advance in physics, in particular it led to Einstein's law of gravitation.

In the earlier scientific outlook we transferred shape or size into the physical world precisely as we experience it in our own visual sensations—not like colour which is only represented in the physical world by a code-number. Probably most scientists would follow the same plan with regard to coincidences, and suppose that the coincidences and intersections referred to in our description of the physical world are just like the pictures of coincidences and intersections which occur in our minds. I do not think that this naïve conception of likeness between essentially dissimilar things can be justified; and, moreover, the quantum theory seems to give a distinct warning against accepting it.

When we pass from the consideration of gross matter to the minutest constituents of matter (electrons and protons), we find that modern physics represents them in a scheme which *forbids* coincidences. There is a fundamental law called Pauli's "Exclusion Principle," which asserts that two electrons can never be in the same cell of the space in which we represent them. Thus, starting from data which the mind has pictured as coincidences of gross matter, physics has by a long chain of inference arrived at a physical world whose fundamental basis is the exclusion of coincidences. I do not suggest that there is anything paradoxical in this, but it emphasizes the fact that inferences need not resemble their data—that criminals need not resemble their clues. We have abandoned the last vestige of any displacement of the ideas of the familiar world into the physical world—the passage is not displacement, but inference. I have hesitated as to whether I ought not to make one reservation: we rather freely displace integers from the familiar to the physical world. The "twoness" of two atoms is usually thought of as being like the twoness in our mental picture of two apples. But I doubt whether it really is so. At any rate, it does not apply to electrons, for in the

modern theory the twoness of two electrons is not completely like the twoness of two apples. In fact, multiplicity should be regarded as a property (indescribable in familiar terms) which, being by its nature discontinuous, has been correlated to the series of mathematical integers, just as continuous properties are correlated to continuous measure numbers.

At present theoretical physics is divided into macroscopic theory and microscopic theory, the former dealing with systems on a scale comparable with our gross senses, and the latter dealing with the minute substructure underlying the gross phenomena. Broadly speaking, relativity theory covers macroscopic phenomena and quantum theory the microscopic phenomena. The two theories must ultimately be amalgamated, but at present we have not got much beyond the pourparlers for amalgamation. So the gap exists—not, however, as a gap in the external world, but as a gap in our understanding of it.

In a recent book, *Science and Human Experience,* Professor Dingle draws what I think is a quite unwarranted distinction between the macroscopic and the microscopic entities in the physical world. According to him the latter are unverifiable hypotheses, existences, or events whose unobservability is part of their essential nature (p. 47). He is contrasting them with ordinary "observable" bodies and events, and he wishes to convey that electrons and protons have an essentially different status in our knowledge from the more ancient denizens of the physical world, such as sticks and stones and stars. I feel sure that this distinction is untenable.

An electron is no more (and no less) hypothetical than a star. Nowadays we can count the electrons one by one in a Geiger counter, as we count the stars one by one on a photographic plate. In what sense can an electron be called more unobservable than a star? I am not sure whether I ought to say that I have seen an electron, but I have the same doubt as to whether I have seen a star; if I have seen one, I have seen the other. I have seen a disc of light surrounded by diffraction rings, which has not the least resemblance to what a star is supposed to be; but I give the name star to the object which some hundred years ago started the chain of causation which has resulted in this curious light-pattern. Similarly, I have seen a wavy trail not in the least resembling what an electron is supposed to be; but I give the name electron to the object which has caused this trail to appear. How can it possibly be maintained that I am making a hypothesis in one case and not in the other?

I do not think that either the star or the electron should be called a hypothetical entity. We make no hypothesis by merely giving a name to that which is the origin of certain impressions which reach

our senses. But it is difficult to separate the name from the hypothetical images that are commonly associated with it. No doubt hypothetical properties and characteristics have often been attributed to electrons, and some of these have turned out to be erroneous. But I rather think that the same thing has sometimes happened to the stars.

In the present century there have been a number of revolutionary changes of scientific thought, but I suppose that none has given a greater shock to the philosophically minded public than the abandonment of Determinism in physics. This represents a further step in the unification of physics and of physical law. We have already seen that physics aims at discovering the scheme underlying the regularities and recurrencies in our sense-experience, and that it has reached a unified scheme of regularity in spite of the diversity of our senses. But on closer examination it appeared that the scheme was not fully unified, for it admitted two distinct types of regularity —types which were mathematically and philosophically distinct. The regularities in our experience were divided into primary and secondary. Primary regularities occurred because they were governed by strict causation; the beginning of the sequence predetermined the end. Secondary regularities occurred, not by strict causation, but because there was a strong probability of their occurrence, and it was unlikely that in our limited experience we should come across exceptions. To give definite instances: I am as sure that I shall get warmed by standing in front of a fire as I am that the sun will rise to-morrow; but physics explained the latter phenomenon as predetermined, whereas in regard to the former it did not appeal to predetermination at all. Whether or not the constitution of your next hand at Bridge is predetermined, we do not risk much in predicting that it will not contain thirteen trumps; so too we can with negligible risk predict regularities of physical experience which have nothing to do with predetermination.

This dual source of regularity is no longer accepted. The changes that have occurred in the fundamental conceptions of physics in the last ten years have brought it about that all the observed regularities are now attributed to the second source. All the primary or deterministic laws have disappeared. I shall not go into details here, since I have already written on the subject more than once.[1] The conclusion can be stated simply:—

> *The result of our analysis of physical phenomena up to the present is that we have nowhere found any evidence of the existence of deterministic law.*

[1] I would refer the critical reader to my contribution to the symposium *Indeterminacy and Indeterminism*, Aristotelian Society, Supplementary Vol. X (1931), where the presentation is more detailed than is practicable in lectures.

By no evidence I do not merely mean no conclusive proof. If there were any phenomena which seemed more adequately explained by a proposed deterministic law, I should count that as evidence, although it might fall a long way short of proof. But that is not the case. It often seems to be overlooked in these discussions that a scientist does not verify law in the abstract; he verifies or disproves particular laws. Scientific evidence (however feeble) for deterministic law would necessarily be evidence for a particular deterministic law. It is significant that physicists like Einstein, who urge that deterministic law will ultimately have to be reintroduced into physics, have not got so far as to suggest a particular law, so that they have not reached a stage at which the claim to be supported by scientific evidence could be put forward.

Determinism has dropped out of physics, not because of any debate as to determinism *versus* indeterminism, but simply by disuse. One day we woke up to the fact that we were no longer employing it. Deterministic law had been the gold stored in the vaults; indeterministic law was the paper in everyday use. Our transactions became more and more a matter of paper currency; but everyone took it for granted that indeterministic law owed its validity to the fact that it was backed by the pure gold of determinism. Then one day we found we were off the gold standard. Physics went on unperturbed, and the gold fetish was exploded. If my metaphor appears to break down, you must wait a little while for it to ripen, for I cannot suppose mankind will for ever go on believing that human life, development and aspirations are dependent on the mysterious rite of digging up yellow metal in South Africa and interring it again in Paris and New York.

It is often suggested that physics has been too hasty in abandoning deterministic law. That, I think, is misleading. Physics, as I have said, is not concerned with law in the abstract, but with particular laws. It is the particular laws that have been thrown over; and I do not think anyone who has grasped the recent progress in quantum theory would say that we have been too hasty in adopting specific indeterministic laws instead of the specific deterministic laws which were the basis of physics twenty years ago. They would have barred the way to the progress that has been made. But we cannot drop all the deterministic laws, and still retain deterministic law in the abstract. If you have spent every pound you possess, the obvious thing is to admit yourself broke, however fondly you may cling to the comforting thought of money in the abstract.

Discussions of determinism and indeterminism can, like many other discussions, be confused by questions of definition. But I do not think there is any obscurity as to the difference between deterministic and indeterministic types of law. Determinism is usually under-

stood to assert that there exist deterministic laws sufficient to deduce all future events from presently existent data.

Now let me turn to the way in which this change in the attitude of physics has been received by those who are philosophically minded. Some, of course, have accepted it in the way I do. But of the rest it seems to me that with one accord they hasten to change the subject and turn the discussion on to a point that has not been raised. Writer after writer proceeds to show that neither Heisenberg's Principle of Indeterminacy nor anything else in modern physics disproves determinism. That, I think, is universally agreed; so is it too much to hope that determinists, being reassured on this point (if reassurance was ever necessary), may spare a little attention to the situation which has actually arisen? If anyone supposes that, so long as physics does not claim to have disproved determinism, it does not matter much what it does say about the question, I would refer him to a passage in Sir Herbert Samuel's Presidential Address to this Institute.

Having stated his dissatisfaction with the older philosophy, Sir Herbert says: "But from this new standpoint I set out more hopefully, and it seemed to me clear that the first principle which philosophy might receive, *as established by science*, was the Law of Causality."[1] Instead of "as established by science," we must now write, "as a principle which science has found no trace of, but which may be true for all that." Is the change so very unimportant? Suppose that I had not noticed the change, and that I were to encourage Sir Herbert to go forward with his scheme relying on the support of physics. His philosophy will doubtless have to fight its way. Presently one critical philosopher will be rash enough to say that deterministic law does not exist. Sir Herbert turns to me: "My enemy hath delivered himself into my hand. Just hand me over one of those deterministic laws you promised, and I will finish him off." I look in one cupboard and another. I become puzzled. "I am sure there were several knocking around here last time I looked." I cannot find any. "Oh, now I remember. We cleared them all away last spring-cleaning."

It is surprising to find a number of scientists among those who do not seem to realize the changed position. For at least in science the status of a hypothesis which is unsupported by any evidence should be perfectly clear. How would a scientific society deal with a paper putting forward the hypothesis that the earth is going to be smashed up by a comet next year? As the author would presumably point out, it is a possibility that cannot be refuted, because we seldom know of the advent of a large comet a year in advance. But I am sure that that would not save the paper. We should seize on

[1] *Philosophy and the Ordinary Man* (Kegan Paul, 1932). Italics are mine.

the point that the author produced no evidence, and indicated nothing in our astronomical knowledge to make it likely. Yet when the hypothesis of the existence of deterministic law comes up for consideration, many scientists appear to ignore the question whether there is any scientific evidence in its favour and drift off into the usual defence that it is not necessarily incompatible with our knowledge —precisely the defence of the man who predicts the destruction of the earth next year.

The criticism is sometimes made that scientists are too much given to recommending and writing about hypotheses put forward on flimsy evidence. I had hoped that we might be united in refusing to give any support to a hypothesis for which there is no evidence at all. As an indeterminist I do not put forward any rival hypothesis. There is obviously a third alternative to entertaining a groundless hypothesis and dogmatically asserting the contrary. And I accept the label "indeterminist" as descriptive of the ordinary attitude of unbelief (not disbelief) which one accords to a hypothesis put forward without evidence. The particular indeterministic laws now used in physics are, of course, not absolutely certain, but they are put forward with the whole evidence of modern research behind them. As to how this scheme will be modified or supplemented by future extensions of knowledge, I can only say that I know of nothing that suggests that it will not continue to be indeterministic.

Some philosophical writers have taken the line that the question of determinism in the physical world has no connection with determinism as it affects the human mind. But I do not see how the two can be kept separate, since human movements are phenomena of the physical world. It can, of course, be suggested that "living matter" is not bound by the laws of physics; but you can scarcely expect a physicist to agree to this cool proposal to snatch away a considerable part of his realm of investigation without giving him the chance of trying what he can do with it. So I take it that whatever supplementary considerations may be needed to explain human actions, they are not in conflict with the laws of physics. But if the behaviour of matter is dictated by a deterministic scheme of physical law, there is no room for supplementary considerations. What significance is there in my mental struggle to-night whether I shall or shall not give up smoking, if the laws which govern the matter of the physical universe already preordain for the morrow a configuration of matter consisting of pipe, tobacco, and smoke connected with my lips? Mental indeterminism is conditional on physical indeterminism, and the new foundation of physics opens the door for the first time to mental indeterminism. The only trouble is that it does not seem to open it wide enough; but at all events the ground of discussion is

changed, and is concerned with widening the opening which we now perceive.

I have spoken of the divorce between the familiar world and the scientific world. We cannot but ask ourselves whither is this road of scientific inquiry taking us in the end? Shall we reach—Reality? I am afraid of this word Reality, connoting not an ordinary definable characteristic of the things it is applied to, but used as though it were a sort of halo. Frankly, I cannot form the remotest conception of how an atom or an electron or even a star would set about the business of "really existing." Atoms and electrons are real enough in a commonplace sort of way; that is to say, they are not hallucinations or fictitious hypotheses—at least I am convinced they are not. But the invocation of Reality seems to imply some higher censorship than the scientific method itself can supply. There is one sense in which existence is known to us. *You* exist. One might say that you know the way it is done because you can feel yourself doing it. But that is a notion of existence which cannot be applied directly to the atom. We may think of a web of existence of which we ourselves and the external world of our experience form a part, but scientifically I mistrust such word-spinning. I would rather sum up the status of the scientific world in this way: The atom, the electron, and the still more shadowy entities of quantum theory are that for which we sought when we started out on the scientific exploration of our environment. They are that for which an unquestioned striving in our nature has impelled us to seek. Let us leave it at that. They cannot be made to mean anything more to us by painting halos round them.

The more clearly physical science has defined its problem, the more explicit have become its own limitations. It is in response to some feeling of purpose in our nature that we construe the meaning of our experience of the world after the symbolic fashion of modern physics and seek out the harmonies expressible by mathematical laws. We feel all the thrill of the detective as the phenomena, apparently so varied and incongruous, fall into order and unite in one scheme the atom and the star, the electron and the universe. But this purpose is not in contradiction to other purposes, equally an essential part of us, which impel us to seek out other meanings in that contact of ourselves with our environment which we call experience. Whether we look to the beginning or the end of the quest, the scientific world of measurable qualities and numerical symbols cannot claim to constitute the whole web of existence; and its significance is not otherwise, and not better, accredited than are the significances of beauty or of moral purpose which likewise stir in our consciousness.

There is undoubtedly a widespread feeling that in the larger

development of science we have created a Frankenstein monster threatening to crush down the nobler aspects of our existence. I think that no one can appreciate the latest turn of physical theory without realizing that this overweening attitude has passed. By the study of regularities in our sense-data we have revealed the harmonies of scientific law. But the tune is not the player, and as now formulated in mathematical symbolism it no longer pretends to be. The voice of science is not a harsh song of triumph of inorganic mechanism over spiritual illusion; it is a gentler strain falling gratefully on our ears from the mystic unknown—like a "tune played by the picture of Nobody."

ON THE CONFLICT BETWEEN RELIGION AND SCIENCE

SIR OLIVER LODGE, F.R.S.

It is often said that there can be no conflict between the two great departments of human interest, called Religion and Science, because they deal with different themes in totally different ways, and therefore never overlap, so that there is no possibility of a fight—the kind of thing that used to be said about Nations before 1914. But this is an exaggeration; no human being can always be satisfied with any one department of knowledge; there are times when he must seek a more comprehensive view. The alternative is to keep your thoughts from straying out of the region to which you are attending, and concentrate on one side only at a time. This has been the practice of many good people, and it is certainly one way of avoiding conflict. But it is not a philosophic or permanently satisfying way. Between the two great regions there is a frontier, and there squabbles and conflicts may occur, unless there be some way of reconciling the frontier inhabitants of the two regions. Our senses tell us that there is a material world full of things which we can investigate; our instincts and intuitions tell us that there is a mental and spiritual world where also we can feel at home. But the object of this article is to show that there is also an etheric or metetheral world, which spreads over both the other regions, and may be the means of reconciling them or of enabling us to attend to either or both without dislocation or shock. We find that the material world by itself is inert and inactive, and also full of discontinuities, and that its operations cannot be understood unless we take into account a continuum, which may be treated as an abstraction and not studied in detail, or else as a fundamental substance with physical properties, to whose interaction with matter all our familiar activities are due, and which in itself is well adapted to physical investigation. My hypothesis is that this same almost unexplored physical substance operates also in the region of life and mind, and ultimately will be found to be the physical vehicle utilized also in the spiritual region, so as to constitute the mechanism whereby spirit and matter interact, and that it will ultimately form a bond of union between the two domains experimentally known to humanity.

The methods used in the two departments are certainly very different, especially when exemplified by the attitudes of their extreme supporters on either side. The religious man cultivates his feelings of faith and awestruck wonder by acts of contemplation

and worship. He traces the Finger of God in action everywhere. His instinct is to appeal for spiritual assistance in any trouble. He is not concerned with the method by which operations are conducted, and he sometimes regards the effort made to explain the process by which ordinary results are achieved as too mechanical and atheistic a method to be at all satisfactory or even permissible. The more extreme members of this school of controversy are so imbued with the notion of Divine activity that they need no other explanation, and consider the formulation of material explanation as perverse and irreligious. They trace the direct action of God not only in the operations of nature, but in human writings, and consider that in those writings they have a system of infallible Authority, which they have only to study in order to arrive at all truth.

There is another equally extreme set among the devotees of science, who, by close application to the detailed phenomena which appeal to the senses, are so satisfied with what they have learned about the complexity of the working and the completeness of the explanation, that they are ready to exclude every other mode of expression, and consider all attempts in that other direction the outcome of baseless superstition. They realize the complexity of the mechanism; they perceive that effects are always produced by changes and adaptations in the material organisms. They never ask for the object or purpose involved, or for the why and wherefore of the devices they study, but are satisfied with what they call the "how" of the actions: until they gradually get to believe that a narration of the physical processes involved is not only all that they can attend to, but all that exists; so that they feel furious and contemptuous with those of the opposite side who recognize and seek to ascertain Divine Intention and Purpose.

Between these extreme groups there is an intermediate set of people, who have in some respects a more difficult, and in others an easier and more peaceful, task. They recognize a truth on both sides. They know that they are part of a material frame of things, yet they never deny that they are in touch with a mental or spiritual world: they feel that in their innermost personality they are already denizens of that world. Some of them can communicate with it; and they are all ready to ask for help and guidance in any emergency. At the same time they know perfectly well that every action is produced in accordance with physical laws, and that without proper mechanism no activity such as appeals to the senses is possible. They know that their knowledge is extremely imperfect; and they are not tempted to deny either the mechanical explanations of the one group, or the spiritual aspirations and ideals of the other. They deny nothing, but seek to learn from both sides whatever contributions to truth they can receive.

To this intermediate group, in its various grades, probably the majority of the human race belong; and the higher, more intelligent, grade of this group probably contains most of the philosophers who try to take a comprehensive view of the universe as a whole, including both the material and the spiritual side. They do not try to keep them separate, but admit their interaction. In the phenomena of animated matter they perceive the interaction at work in its simplest and most accessible form. They welcome the teachings of the materialistic biologists on their positive side, and rejoice in their discoveries. The discovered laws of heredity and the powers of adaptation in living creatures give them information, and do not perturb them. They realize that a process of evolution has actually gone on, and that it is the means whereby the richness and variety of the material forms have been produced. When in a scientific mood, they are as loth as the others are to appeal to the Finger of God or to any spiritual agency as part of the mechanism to be appealed to in order to get an understanding of the process. They know that such appeal is illegitimate in science, and is equivalent to admitting defeat; and yet they do not deny that such operations are continually occurring, and they believe that for a comprehensive understanding of everything, including Design and Purpose, such appeal must be made. Their doctrine is that in the last resort, for an ultimate explanation even of the simplest thing, the Divine Will must be evoked. Consequently they can reconcile the two modes of thought by saying that every natural process is conducted in accordance with a spiritual intention and a far-seeing design, but yet that the operations are conducted according to a system of mechanical law and order, that can gradually be disentangled, formulated, and more or less understood. They do not look for sudden irruptions of Divine activity, or for any breach of laws. They realize that Divinely designed mechanism would be perfect in its working, and require no tampering with, no suddenly executed repairs, nor any other introduced improvements, such as are familiar in all but the most perfect kind of human machinery. They believe that a physical universe has been contrived, so as to be perfect in its working, except in so far as it is interfered with and modified, or it may be spoilt, by the free will agency of other spirits, who, being associated with material organisms for a time, have a certain power of interfering with the scheme, and bringing about results which, though foreseen, cannot be considered part of the Divine Intention.

To this group the doctrine of an etheric intermediary or continuum, —fulfilling the purposes of interaction, and serving as the means whereby results are achieved (however gradual or law-abiding those results may be)—this doctrine I say should be a help, and enable the operations both of the material and the spiritual world to be under-

stood more fully and more comprehensively than without such intermediate agency.

I have argued that, according to our experience in physics, the ether is continually in operation, and that all our activities are due to the interchange of energy between ether and matter, whether it be brought about by automatic mechanism or as the result of our own purpose and design. And as a speculation I surmise that the idealistic and essentially real permanent part of ourselves is in continual touch with this semi-etheric mechanism, if so it can be called, and is the means whereby even the simplest spontaneous actions are accomplished. We ourselves have no power of causing any change or any movement in the material world except through the agency of an organism. And by study we find that the atoms of matter are operated on by the ether, and by nothing else. All physical fields of force exist in the ether, and must operate in every change produced in inert particles of matter, whether they be parts of an inorganic substance or parts of an animated body.

We thus find that all activity is to be sought for in space. It is not to be explained in terms of matter alone, nor is its range of action to be limited to the lumps of matter which we see around us. Astronomers tell us that space is far more extensive than the discontinuous material bodies which occupy an infinitesimal portion of its vast extent. And I surmise that this continuum is the home or habitat of all that we call life and mind, and constitutes its body or means of manifestation. The ether is the only means whereby spirit can act on matter, the only means whereby its activities can be brought within the range of our human senses.

The doctrine of mechanism and physical causation is very seldom sufficient to give a complete account of any ordinary occurrence involving the action of live things. It may be true as far as it goes, but it does not go all the way. Sooner or later we find we have to appeal to some psychic fact, some action of what we may call a mind, even though in incipient form. The first and most obvious criterion for some activity not within the scope of physical science is spontaneity of movement, so that our instinctive remark about the spasmodic action of, say, a jumping-bean, is that "it behaves as if it were alive." Clockwork mechanism may be made to simulate vitality, and might deceive a child for a short time, but it is always sooner or later perceived to be an imitation, the mechanism of it is completely intelligible and may be readily understood. But sometimes the thing really is alive, as for instance in the case of a jumping-bean. Inside the hollow space is a maggot or other creature, which coils itself up, and suddenly liberates itself, so that it jumps against the ceiling of the cavity, and makes the whole thing leave the ground for an instant. As soon as it is understood that the action is

that of a live thing, no further explanation is thought necessary, and physics loses interest in it as soon as it has explained that the action is consistent with the laws of mechanics, given the unexplained spontaneity. If any live thing shows a behaviour which is difficult to explain mechanically, then a physicist might be interested, as for instance the way in which a cat, if dropped from a small height, manages to alight on its paws. This was seriously examined by Clerk Maxwell, and shown to be consistent with the law of conservation of angular momentum, though at first the rotation of a body in mid-air did not seem easily explicable, unless it possessed an initial amount of rotation. The wriggling of a falling animal may instinctively achieve a result which is at first puzzling, yet in the end a complete explanation may be, and always is, forthcoming, though the instinct responsible for the bodily movements may require some further and more psychological study.

I should suppose the same kind of thing to be true of the movements of a so-called "medium," who in trance may be able to produce physical phenomena of an unusual kind. I should always look for the physical concomitants of such a performance, and assume that they were explicable by ordinary laws. But there might be some intelligence, shown by the activity, which could not be thus explained, and which would involve some psychical addition. Considering that the "medium" is alive, it is not surprising that such an element must be appealed to, though the identity of the intelligence concerned may raise questions not so easily settled.

But without entering upon what may be regarded as a questionable set of phenomena, it is quite familiar that a psychic element enters into our everyday experience, and often we are aware that there must have been some plan or design or purpose associated with some simple observation, although we may be unable to specify what it is in any given instance. Thus, for instance, in taking a country walk recently, we noticed a long row of willows that had been recently pollarded, but among them there were two trees standing in the row which had been uncut. The natural ejaculation was, What are those two left for? Why are they treated differently from the others? There must have been some purpose. That is the point. The feeling is inevitable that there must have been some purpose. As far as the mechanism was concerned, the cutting or non-cutting of the trees was quite straightforward, but there was a psychic element of some simple and obvious kind, which nevertheless was not apparent. This is an absurdly simple illustration of what is familiar enough, that we constantly have to make appeal to the spiritual world, or at least to some psychic entity of a quite ordinary kind, for the complete explanation of any simple experience. I do not know why those trees were left, and it is no concern of mine, but doubtless if

it was worth while I could find out somebody and ask: which again is a psychic operation, and indeed is the method we naturally apply for finding our way across an unknown country. We are continually immersed in a psychic or spiritual world, though our touch with it is so commonplace that we ignore the mystery attaching to it. Our very speech, our writing, is a psychical as well as a physical phenomenon. And only very exceptionally does the occurrence of these two aspects of existence attract our notice, or seem to need further exploration. All the common objects around us in a room are full of human design and purpose. They are signs of human ingenuity as well as of an application of physical energy obtained from food and utilized in a way studied by physiologists as a matter of nerves and muscles.

If it be true that we have to postulate the interaction of an ether to explain the movement and the behaviour of every particle of matter, it may also be true that we have to postulate the agency of that same ether before we can understand the way in which a psychic element operates on the material so as to bring about a purposed arrangement. For if ever the psychic and the material interact, there must, one would think, be some physical agency which connects the two, so as to render the action possible, that is to say, there must be some physical mechanism which can transmute a thought into an act. It is by such transmutation into material activity that everything is accomplished. Transformation of potential energy into kinetic or *vice versa* is the accompaniment of every activity, and I argue that transmutation from the psychic to the physical is the accompaniment of every purposed action carried out in accordance with an intelligent design, whether the intelligence be of the lower grade of instinct, or whether it be of the more dignified kind which we associate with consciousness.

Why do I bring the ether into such an ordinary everyday process? The reason is because physics has taught us that inert matter can only be operated upon through the ether, and is never otherwise interfered with and can do nothing of itself; and because we find by our everyday experience that intelligence does produce results in matter, and therefore must have been able to operate on the ether in some way to which we are accustomed, but which we do not yet understand. The physiological mechanism by which an act is achieved is complete up to a point, but it never explains the purpose which determined the performance of that act at a given time and place for the attainment of a desired result. Instinct causes a spider to spin a web, a bee to construct a honeycomb and fill it with feeding matter collected from plants as a provision for a time when food is less plentiful; instinct causes a bird to build a nest for the sake of future offspring; and brings about many other structures of beauty

and design, such as biologists tell us of. A higher kind of conscious intelligence enables man to design and build a bridge or a house or a cathedral, or to produce a poem or a work of art, for reasons which in some cases he might find it difficult to specify. He works completely in accordance with the laws of physics, but the laws of physics alone would never account for his performance. The physical world is insufficient, the psychic or spiritual world must always be appealed to. The interaction of such a world is displayed in its lowest grade by the totally unconscious agency of mere vitality, such as is exhibited by vegetation, where the energy from the sun is utilized to produce foliage and flowers and reproductive organs, all perfectly adapted to their purpose, when not interfered with by untoward agencies; and these may be rightly taken as an indication of some planning and design not in the least incorporated in the physical and chemical mechanism concerned.

If we consider the lilies of the field in connection with the other phenomena that we have been dealing with, we shall realize that their beauty and adaptation represents some aspect of the universe higher than anything to be experienced from the mere interaction of ether and matter, and that requires a planned scheme of guidance whereby etheric energy shall be so influenced as to contribute to and make possible the observed result. The chemical details of the process can be studied by Baly and other chemists; and the elimination of oxygen as a waste product—deleterious if left in the tissues but a health-giving and necessary ingredient for animal life when extruded—must be taken as part of the beneficent design which humanity is now becoming able to recognize throughout both the animate and the inanimate worlds.

Indeed, we find that the etheric energy derived from the sun is not only conspicuously utilized by vegetation, so as to contribute food and other elements necessary for animal life, but the rays of the sun are being found to have a directly beneficent influence on animal life itself. The vitamins to which so much attention has been recently directed by the President of the Royal Society are, I believe, more influenced by etheric activity than we are yet fully aware. Bio-chemists have traced their activity in producing Vitamin D, but their influence is suspected in other vitamins also; and without them the chemical ingredients alone, such as could artificially be put together, would be ineffective. This is a matter that requires still further study. The influence of irradiation is being advocated and experimented upon by Dr. Chalmers-Watson of Edinburgh, and I hope by many other bio-physicists. It is known that the chemical ingredients of sea-water artificially put together are insufficient to maintain marine life in a flourishing state. Some other non-chemical but presumably physical ingredient is required

too. It is contained in natural sea-water, and whence can it be derived except from that hitherto ignored physical element the ether, whose radiation activity is known to be responsible for all other energy, and probably for much else of which we are only beginning to be aware? I call upon bio-physicists to supplement the work of the bio-chemists, and to show that the etheric activity of radiation must be appealed to both for the maintenance of health and for the restriction of those obscure phenomena that we call disease. This must be done before the whole assemblage of biological phenomena are properly understood, and their interacting agencies thoroughly correlated so as to interpret the great variety of healthy vitality which we find on this singularly well-adapted planet.

Thereafter, when our existence continues amid other surroundings, we shall not be in ordinary association with matter as we are here, and therefore shall not appear to the senses of our fellows left behind on the earth. We shall have a body or mode of manifestation suited to our new surroundings and shall be fully perceptible to our fellows in like case. My hypothesis is that this body or more refined mode of manifestation will be composed of ether, and may be properly spoken of as an etheric body, or what St. Paul called a spiritual body.

A PHENOMENOLOGICAL SYSTEM OF ETHICS (II)

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I

THE manner in which the phenomenological method has been applied to the data of ethics by Max Scheler, and his resulting criticisms of the formalism of classical theories of an absolute good and the subjectivity and relativity of the opposing "content theories," have been discussed in a previous article. It is the purpose of the present paper to present Scheler's claim to have resolved this dilemma in ethics by laying bare a structure of value too often obscured by the series of falsifications and confusions that he has exposed.

Though it is not his own line of approach, it will be easiest to relate this argument to the previous discussion by referring once more to his doctrine of feeling as the medium of value experience.[1] His distinction between feeling states and "intentional functions" had revealed the error of psychological hedonism. The recognition of such affective functions, however, suggests that, though pleasure is admittedly neither the aim of action nor the supreme good, which *should* therefore be its aim, there must be *some* essential connection between it and value. This question can only be settled, Scheler declares, after the various strata of the emotional life have been distinguished. Obviously the states referred to as blessedness, happiness, joy, gaiety, satisfaction, pleasure, or their opposites: misery, unhappiness, grief, sadness, dissatisfaction, pain, differ in more than mere intensity. Nor are the differences in quality, assumed by Lotze, Lipps, and others, really sufficient to account for the differences between some of these states. Grief and melancholy differ in quality, but there is a further difference between such states and the disagreeable hedonic tone of sensation, which belongs to another dimension of feeling. Some of the martyrs seem to have enjoyed a state of bliss whilst suffering intense bodily pain; people in profound despair, on the other hand, frequently seek distraction in sensory pleasure, and men suffering the pain of material ruin may face their troubles cheerfully. Moreover—and this is the significant point—such feelings neither alternate nor fuse, as do those upon

[1] *Der Formalismus in der Ethik und die Materiale Wertethik*. Third Edition, Halle, 1927, pp. 340–57.

the same level, such as grief and joy, or grief and melancholy, but subsist contemporaneously as distinct strata of consciousness. It would appear, then, that feelings differ not only in quantity and quality but also in *depth*. Some feelings belong to a deeper stratum of the personality than others, and are thus more pervasive and more durable than those associated with more superficial levels.

Scheler distinguishes four levels of feeling in the psychological constitution of man, viz. (*a*) the transitory feelings of pleasure and pain directly aroused by sensation, and thus associated with the activities of the sense-organs; (*b*) the more pervasive, uniform, and durable feelings connected with the activities and functions of the body, most accurately described as "feelings of vital function"; (*c*) the purely psychical feelings arising at the level of definite self-awareness and connected with the psychical activities of the ego; (*d*) the spiritual feelings of bliss and despair, associated with no specific objects or events, but issuing from the depths of the personality and suffusing the whole being. Such feelings imply the positive or negative value of being, not of doing this or that act, or possessing this or that good. They can be neither deliberately produced nor merited, as Luther saw when he denied that blessedness was the reward of works.

If we admit this as probably an approximately correct analysis of the emotional life, and if we grant also that value is apprehended through emotional response, it follows that the levels of preference which both ethnologists and moralists discover in the historical valuings of humanity should correspond to these strata of feeling. This Scheler evidently believes to be the case, for there is a close correspondence between these emotional strata and his scale of values, which he had introduced earlier in the same work.[1] He had there distinguished—

(*a*) The specific quality of objects experienced through the reactions of sensory pleasure and pain, which he calls the value of pleasantness—unpleasantness. That this is a genuine value, *i.e.* that what yields pleasure is rightly described as *good*, what causes pain as *bad*—let ascetics combat it never so vigorously—and that the opposition of such positive and negative value is an *a priori* one, is evident, he thinks, from the fact that a being who actually prefers an unpleasant object to a pleasant one is inconceivable. If a scientist or explorer reported the discovery of a race of men or animals exhibiting such a preference, the report would be dismissed as absurd, or the facts explained in some other way.

(*b*) The value of vital feeling, determining the oppositions of the magnanimous and the mean or paltry, the noble and the base, of exaltation and depression, health and sickness, the vigour of youth

[1] *Op. cit.*, pp. 103–9.

and the weakness of old age and decay, of life and death. These values are commonly reduced by hedonists to the first class, by rationalists to the third, but it is important, Scheler urges, to recognize them as an independent type.

(*c*) A class he names "spiritual (*geistig*) values," which is phenomenologically independent of the other types and of all biological functions, and includes as co-ordinate species moral, æsthetic, and intellectual value (or the value of knowledge). That this class is higher in the scale of value than the second is evident from the fact that we recognize the duty of sacrificing vital value to spiritual in case of conflict, *e.g.* health to the advancement of knowledge, life to honour. Apparently, however, he finds no ground of preference between its species, which is doubtless his reason for treating them as co-ordinate values on the same level of experience. The fact that he ascribes intrinsic worth to the good will and its acts, and appears sometimes to regard personality as the supreme good, precludes him from subordinating moral to intellectual or æsthetic value, *e.g.* as means to end. On the other hand, that the æsthetically sublime has most kinship with his highest type of value might have suggested its claim to priority, but he does not admit this.

(*d*) As supreme in the order of value Scheler esteems the Holy, using this word, which, he claims, is applicable in the strict sense only to an absolute object, to designate the intuited value of the Supreme Being. It is irrelevant in what things or persons, what institutions or powers, this value has been discovered by different ages or races. A unique experience of value, however dim and confused, however inadequately expressed, is discernible under all these varieties of dress. The value it represents is quite distinct from the values of other levels, and again claims priority over all, inasmuch as every other good must give way to it in case of conflict. It is particularly important to distinguish the value of the Holy from moral value, with which it has been too freely identified, notably in Protestant religion. Scheler has devoted considerable space to this distinction in his works on the philosophy of religion,[1] but it is impossible to discuss it here. The quality of awe and mystery that characterizes the experience of the Holy will sufficiently indicate the nature of the difference he discovers.

Whether he believes his classification to be exhaustive is uncertain. One notices the omission of certain obvious values which cannot easily be brought under any of his types, *e.g.* the value of love. Apparently he regards this as a case of valuing rather than of value, but it is not clear why some emotional responses to value may not themselves have value. In such a case the total situation would

[1] See esp. *Vom. Ewigen im Menschen*, vol. i, Pt. 2, *Probleme der Religion*, Second Edition, Leipzig, 1923, *passim*, *e.g.* pp. 252 ff.

have greatly enhanced value, whilst there would be *some* value even if the response were to a valueless object.[1] Whilst he may be open to criticism for specific omissions of this kind, however, Scheler's position should safeguard him against the general charge of the incompleteness of his scheme, for he would hardly claim to possess insight into the entire realm of value; hence any such classification must necessarily be tentative and open to correction with the growth of knowledge and the deepening of human experience.

There are, of course, innumerable objects possessing derivative value as contributory to one or other of the above types of intrinsic good, *e.g.* the indefinite range of material objects that we classify as useful, meaning by this contributory to the value of pleasantness, all that promotes the welfare of the race, the so-called cultural goods (art collections, institutions of learning, the system of civil law) that mediate spiritual values, the cults and sacraments that give access to the value of the Holy. Many of these means are so intimately associated in our experience with the ends they promote that they become symbols for the value of these, and are indeed scarcely distinguished from them. This is notably the case with the utility of material "goods," to which modern civilization devotes so much attention, even treating it as an independent species of value, if not even as the supreme value, to which all others that are not overlooked altogether are to be subordinated. For the sake of argument, therefore, Scheler often accords the useful an independent place in his scale, merely insisting that to esteem it above the others is one of the grossest examples of the falsification of value that history affords.

His analysis of this falsification,[2] though apparently inspired by Nietzsche, is so original that no account of his ethics would be complete without some reference to it. It is, he suggests, a product of resentment. Nietzsche's account of the transvaluation of values in Christian morality, though not applicable to genuine Christianity, is a very accurate description of the outlook of modern society. It represents a perversion of the Christian ethic by a tendency quite opposed to its true spirit of chivalrous self-giving, that takes no thought for the morrow, being full of a power and vitality that knows itself to be rooted in the source of all life and power. Such a transvaluation is characteristic of an age of declining vitality, which, conscious of its own powerlessness, blinds itself to any good that is

[1] It must, however, be remembered that the value of such an "organic whole" bears no constant or calculable relation to the values of its elements; hence the situation may be bad on the whole, though containing a valuable factor, as in the love of cruelty. For a discussion of such cases see G. E. Moore, *Principia Ethica*, Cambridge, 1922 edition, pp. 27 ff.

[2] In the essay, *Das Ressentiment im Aufbau der Moralen*, included in vol. i. of *Vom Umsturz der Werte*, Third Edition, Leipzig, 1923.

not commensurate with its capacities, and depreciates values to which it cannot attain. Qualities like strength, youth, beauty, have an irresistible fascination for the man who lacks them. And, since he cannot ignore them, his annoyance at his failure to acquire them leads him to resent, and therefore to disparage them. His impulse to revenge, accompanied as it is by a feeling of impotence, results in a sort of poisoning of his personality. Not only does he decide that grapes are sour; he glories in their sourness, declares sweetness a defect. In this manner does a generation whose vital forces are declining depreciate the qualities it has lost, exalting in their stead the opposite states of poverty, suffering, death—not, of course, by any conscious lying or deceit, but by a perfectly sincere judgment upon objects distorted by an emotional bias.

This, Scheler claims, is a fair representation of the ethos, not of Christianity but of the secular society that began to emerge about the fourteenth century, and reached its climax in the French Revolution, but whose outlook continues to dominate Western civilization to-day.[1] Humanitarianism is an expression of the resentment of the low-minded man towards the social, or moral, or intellectual aristocrat. Its altruism is not a spontaneous overflow of love; it is essentially protestant and polemic. Its object is not the individual—one's neighbour—but mankind as an undifferentiated whole. With it everyone counts as one, none as more than one, for it would be robbing humanity of its rights to feel affection or loyalty towards a smaller group—nation, family, or individual. It is a protest against ruling minorities in possession of goods, hence its demand for equality. Humanity is the idea that is exploited against this hate. Inspired by the resentment of the common man towards all superiority of opportunity or gifts, it substitutes quantitative criteria for qualitative, asserting that the claim to the possession of power or goods should not be the gifts to exercise or utilize them but simply the willingness to work for them. Thus mere toil, not the intrinsic worth of achievement, becomes the measure of the reward.[2]

The modern tendency to subjectify value proceeds from a similar motive.[3] Resentment against the claim of a value that the individual fails to attain finds expression in the denial of the whole order of value, and the substitution of an arbitrary personal standard. Man avenges himself on the good he cannot reach by dragging it down to his own level. Since he lacks the courage to live by his own judgment, however, he turns for support to his fellows, inquiring whether others feel as he does, and he finds the common interest of society an acceptable criterion, since whatever phases of life or culture rise

[1] *Das Ressentiment im Aufbau der Moralen*, p. 107.
[2] *Op. cit.*, pp. 149 ff. [3] *Op. cit.*, pp. 192 ff.

above the level of common achievement are objects of his envy and hate.

It is by the same psychology that the cult of the useful has attained its vogue in modern industrial civilization, that things have become the masters of men.[1] It is true that the best minds of the age resist this trend of modern life, but they do not seem always to be aware that it is a sign of the triumph of a slave mentality which has substituted the qualities that are shared by the meanest among men: industry, economy, adaptability, reliability, caution, foresight, cunning, for the values of vital function: energy, generosity, courage, loyalty, self-sacrifice, indifference to material goods, love of home and country—which, in short, has exalted a multitude of objects and qualities, that derive all their real worth from the ends they serve, into ends in themselves through the disparagement of ends it has not the power or vitality to enjoy. An immensely complex mechanism of production has thus been built up, resulting in ceaseless toil without any reference to the ultimate good that is to result, and exhausting all the force needed to enjoy it when attained. The so-called triumph of modern civilization is no advance but a decadence, representing the victory of the weak over the strong, of cunning over talent, of quantity over quality, and the loss of the real ends through absorption in things that are means merely.

Now it is obvious that so uncompromising an attack upon the foundations of modern civilization is not likely to go unchallenged. If, then, Scheler is to meet the answers to his criticisms, he must be able to exhibit the principles of preference by which he recognizes ends as higher or lower, or even distinguishes them *as* ends from things which derive all their value from them. He does, indeed, develop these principles with some care and thoroughness,[2] but it is surprising, and a little disappointing, to find that he has apparently reached his paradoxical conclusions by the application of almost the same criteria as those employed by Bentham and others with very different results.

Preference, he maintains, is not a matter of explicit judgment upon an experience of value, for it is through acts of preference that new values are discovered. There are certain characters in virtue of which objects present themselves as higher or lower in the order of preference: (1) In the first place, we give preference in case of conflict to values that are durable. Health is a more lasting good than the pleasantness of momentary indulgence, the knowledge of truth than life, the value of God than any good realizable in man. (2) A value that can be indefinitely shared is preferable to one that cannot. The value of the pleasant, pertaining as it does to objects yielding sensory stimulation, is extensive, and therefore shareable

[1] *Op. cit.*, pp. 199 ff. [2] *Der Formalismus in der Ethik*, pp. 87–98.

only through division or distribution of the stimuli, involving their diminution to vanishing point. The values of beauty or holiness are subject to no such limitation, but even prove to be sources of union, rather than of division and strife as the lower goods too often are. (3) Values that are the conditions of other values are esteemed higher than those that are conditioned.[1] Utility is obviously conditional upon other values, but the pleasant, too, depends on the values of vital function, for without vitality, health, vigour, no objects are pleasurable. (4) The depth of satisfaction yielded is another criterion. Obviously we ascribe less value to objects that yield us transitory and superficial pleasure than to the sources of moral exaltation or of the joys of intellectual discovery, which spring from the deeper strata of our emotional life, though it must be clearly understood that this is merely *a criterion*, and that the value is the condition of the satisfaction, not the satisfaction of the value. (5) Lastly, absolute values are to be preferred to relative ones. Scheler does not, as we have seen, admit the relativity of any value in the sense that it consists in an affective, or motor-affective, relation to a subject. He recognizes, however, that the value of pleasantness can be *realized* only through the action of an object upon a sentient subject, and he seems to think that the values of vital function involve a similar relation between living organisms and their environment, though it is not quite so clear why this need be more than a relation of means to end. On the other hand, objects may be beautiful, or good, or holy, apart from any relation to ourselves or our organs. We are directly aware of this relativity of the lower values, he says, in our instinctive feeling of guilt when, for example, we prefer something that is merely pleasant to the senses to an object of artistic or intellectual worth.

II

It will be clear from the character of the above criteria, notably from the fourth, that the emotional response to the higher values is a response of the whole personality. It is presumably for this reason that Scheler calls these higher values "personal values," or, more accurately, "values of personality," which is, nevertheless, a very misleading phrase, since it is clearly *not* his intention to represent æsthetic value, for example, as applicable only to persons, or realizable only through them.[2]

It is impossible to enter into his difficult doctrine of personality,

[1] Cf. Bentham's criterion of fecundity.

[2] For a discussion of the character of these values, see J. S. Bixler, *Religious Realism*, pp. 77–8.

as distinguished both from the self and from the psycho-physical organism.[1] It must suffice to point out that, whilst he endorses Kant's destructive argument against a soul substance, or real agent underlying its acts, he is equally emphatic in rejecting the common alternative that the self is no more than the mere sequence of psychical states. The representation of a being looking down on the passing stream of experience is, he suggests, an image drawn from the spatio-temporal sphere; it is a "thing" in a quasi-physical sense. We can either eliminate such soul substances or postulate a plurality of them underlying any stream of experience without making the least difference to the experience itself, for no such entities are phenomenologically given. Nevertheless, the self is more than the stream of passing impressions. It exists *in* its acts and changes with them, without being either dissolved into the changes or itself a thing that changes. The datum of intuition is *an individual experient pervading experience and given with it as an indisputable phenomenon.* It is only by abstracting the contents from the form of the experience that psychology is able to represent the former as a series of floating presentations.[2]

Scheler makes a subtle, though doubtless phenomenologically accurate, distinction between self and personality. The self is given in experience, and can be made an object of introspection. We can undertake *self*-examination or *self*-analysis; we can even convey its essence (*e.g.* in an autobiography) without referring to its corporeal embodiment in order to establish its identity. The personality cannot be thus objectified. Which of us would claim to be acquainted with his own personality, however exact the self-knowledge he believed himself to possess? Yet we are aware that mental acts, despite their differences in character as perceiving, loving, purposing, valuing, etc., and the variety of their references, represent a connected performance. This complete and essential unity of acts of different types constitutes a person. Personality exists in *the experiencing* of such experiences. It cannot be grasped in them, for an act cannot be observed as an object, and neither, then, can that which exists only in acts. To borrow Professor Alexander's useful terms, it cannot be "contemplated" but only "enjoyed," the acts and personalities of others being enjoyed sympathetically (through *Einfühlung*). Neither the person nor his acts are thus open to direct psychological investigation. Experience as concrete activity, however, contains every species of act that is phenomenologically distinguishable, related according to the laws of their structure. Personality exists in them, and gives individuality to their connec-

[1] *Der Formalismus in der Ethik*, Section VI, A.
[2] *Op. cit.*, pp. 390–401.

tion. It is the concrete unity of all mental acts having a continuity of meaning and objective reference.[1]

It follows that a person will undergo continuous transformation through his experiences. It is not accurate to say that *they* change *him*, for the change from experience to experience is the form of his being; his character is the present mode of being of his past experiences. They do not survive in a shadowy, spatial form to haunt his present, nor do they persist as dispositions causing a future change here and there, for such dispositions, being neither consciously nor subconsciously experienced, are a mere hypothetical X. They are rather at work in the present, which is penetrated by a past that conditions all its acts. This does not mean, of course, that the whole content of present consciousness is cognized *as present.* Part of it has always past and part of it future reference. Not only does the "specious present" include a portion of both past and future, but its content has innumerable relations to what is no longer and what is not yet given, so that there is implicit reference to the whole life at every moment. Thus the fact of existing only in and as experiencing does not restrict personality to the moment of experience. Though it cannot accurately be said to exist *in time*, it at least performs its acts through time, inasmuch as its present implies a past which is known and referred to *as* past, and its character is apparent through the direction of its change.[2]

When he comes to consider the ethical implications of personality, however, Scheler assigns it certain differentiæ which involve some restriction of its denotation.[3]

(*a*) Personality emerges, he now insists, only at a certain level of mental development. Animals have psychical life, are even in some sense selves, but they are not persons. A child even possesses self-consciousness, yet it only becomes a person when it reaches "years of discretion." The "phenomenon" through which such discretion is exhibited most clearly is the power to discriminate between one's own thought or feeling and that of another without referring to its physical manifestations. If one needs to remember the vocal expression of a command or desire in order to refer it to another human being, one is not yet a responsible being, and therefore not a person. (*b*) Clearly, then, personality implies full possession of the wits. We believe ourselves to be in contact with another person so long as we can follow his communications, entering into his judgments, and connecting them into a unity of meaning. If we discover no such connection, our attitude changes and we begin to explain them psychologically by their causes; in other words, we cease to ascribe personality to him, and regard him externally as a

[1] *Op. cit.*, pp. 397–402. Cf. Hilda D. Oakeley, *The Philosophy of Personality*, p. 96. [2] *Op. cit.*, pp. 440 ff. [3] *Op. cit.*, pp. 495 ff.

"case" to be scientifically investigated. (*c*) Personality implies the conscious control of the body. The man who is a slave to his appetites is not a person. We find historical evidence for this restriction in the fact that men who have not had legal possession of their bodies have not as a rule been recognized as persons. The slave possessed life, consciousness, even self-consciousness, but he was not a person. To kill him was not murder, for it was merely the destruction of a chattel. Similarly under Mohammedanism, which sanctions polygamy, women have no souls, *i.e.* they are not personalities. (*d*) Personality, as distinguished both from a soul substance and from a self, as experienced in introspection or any other mode of observation, is no more a psychical than a physical existent. Its acts—perception, memory, expectation, preference, etc.—may have reference either to psychical or to physical objects; as acts they are psycho-physically indifferent. The traditional problem of the relation between mind and body is thus irrelevant from this point of view. The personality acts as directly upon the external world as upon the stream of psychical contents that constitute its "inner life." The inner is not the medium through which it affects the outer, nor is its experience a sequence of interacting psychical events and bodily motions. Its activity is rather a phenomenological unity of the two, and the difficulty, as Kant saw, is a fictitious one.

Personality, then, is the unifying centre of experience, and as such is completely individual. We cannot evaluate it by general moral standards, but only sympathetically through the ideal adumbrated in its purposive acts, as the sculptor, Love, in Michelangelo's sonnet, could delineate an entire personality from a few isolated traits: an action, a facial expression, etc. It is such sympathetic insight, however incomplete, that raises the understanding above general notions to the grasp of what is unique.[1] Thus all moral acts must be personal acts. We have already seen the rôle of the individual conscience in morality. Nevertheless, it must not be supposed that such acts always represent the moral insight of the person performing them. The paradox of morality, discovered by Aristotle, that we need moral insight in order to lead a good life, yet must lead a good life in order to avoid the errors in such insight resulting from our preoccupation with our own interests, and our tendency to adapt our moral judgments to our weaknesses and failings, is resolved when we recognize that autonomous willing does not *involve* such insight, or at least that the individual whose moral capacities are undeveloped may act upon partial or indirect insight—hence the value of authority in morals.[2] Obedience to authority is not, as Kant believed, heteronomous action, like the effects of suggestion or contagion, for it implies recognition of *the value of the authority.*

[1] *Op. cit.*, pp. 507–8.

[2] *Op. cit.*, pp. 339–40.

It is not the slavish following of a command because it is commanded, but because it is commanded by someone whose experience and wisdom are seen to be superior to one's own. Thus, although one may not fully appreciate the goodness of the *act*, the recognized goodness of the will that commands it is its guarantee. As this latter insight may again be incomplete, there is, of course, liability to error—the willing of bad acts in obedience to a bad authority—but direct insight is liable to similar errors, and, as moral knowledge is gained only through experience, guidance by the experience of others seems to be an essential means to the attainment of complete autonomy.[1]

The basic universal norms, comprising the cumulative insight of the race into the nature of good, represent the essential minimum of ethical achievement that is required as a preparation and background for individual endeavour; nevertheless, inasmuch as the ethical ideal is an ideal of personality, the most valuable form of guidance is that of personal example. It is again incorrect to call the following of an example a heteronomous act, for it too is altogether different from imitation, or the effect of hetero-suggestion. This becomes clear when we recognize that it is a result of valuing, *i.e.* of the appreciation of a personality or character, not of volition or any striving to do or to achieve. It is not a man's *acts* that furnish the example but his *being*. We follow whom we love, not under constraint or as an obligation, but by virtue of the attractive power of what we spontaneously appreciate as good, and thus desire to realize ourselves. We do not will *what* the example wills but *as* he wills; nor do we become *what* he is, but again *as* he is. We do not always even recognize him as our example, much less choose him. It is a doctrine to which Scheler attaches great weight, that valuing is prior to the apprehension of meaning, or judgment. We often experience attraction or repulsion, *i.e. feel* the good or bad of a thing, before we are sure what it is. So we may follow an example, as many an artist follows æsthetic standards, without being explicitly aware of it. If, however, we go on to analyse our emotional response, it emerges to reflection, and it is important at least to be able to recognize a bad example, based on a falsification or distortion of value.[2]

It follows from the dual character of moral good, as individual yet demanding the guidance of enlightened authority, that moral responsibility is not a purely personal matter. Society as an ethical concept, the true kingdom of ends, is, for Scheler, a closely knit organic whole. As the contribution of each organ affects the character of the organism, thus influencing and partly determining the contributions of the rest, so in social institutions—family, Church, State, industry, culture—mutual responsibility is not confined to

[1] *Op. cit.*, pp. 519–21. [2] *Op. cit.*, pp. 597–605.

specific contracts or promises, but implies some responsibility of each for all who participate in the undertaking. On the principle of solidarity values are pooled, and men share in the achievement or failure of others.[1] If values are objective, it is irrelevant who realizes them. The exclusive attention to the agent, who is directed to seek "his own good," is characteristic of the modern tendency to subjectify them, which results from man's resentment towards, and mistrust of, his fellows.

It will be evident that such a view is unusually well adapted to maintain a balance between individualism and collectivism. Since the achievement of every mature individual, as also of every civilization or culture, is unique, the *summum bonum* must include an immense diversity of values, realized at different periods of the race's history. As a result of the social solidarity just described, however, this final achievement can be no aggregate or mechanically related whole, but must present an integration of factors which are so far interdependent that the loss or failure of one will involve the marring or destruction, or the omission, of an indefinite number of others.[2] Thus "ethical personalism" does not imply sociological individualism. Though personality is the supreme moral value, this does not mean that it is the psychological cause, or the necessary instrument, of progress. Doubtless it was required to play this rôle in early periods of human history; in primitive societies the personal factor is always the decisive element in any advance. But Scheler considers it at least legitimate to speculate whether the process by which, with increasing maturity, the individual passes beyond the subordination to general rules and imperatives and attains personal insight into objective good may not require the compensatory transference of the motive powers of social development to impersonal forces and movements. Certainly the growing solidarity of interests achieved through the division of labour and other phases of the technique of production seems to constitute just such an impersonal force. If this be the case, the increasing mechanization of life, so commonly decried by devotees of the higher values, far from implying the subordination of these values to mere utility,[3] may actually serve to release the deeper strata of the personality from this bondage to the demands of temporal progress, *i.e.* to the creation of hedonic and vital values, by substituting mechanical forces for the expenditure of human energy in this direction. He therefore suggests as a new, yet if rightly understood a fundamental moral principle that *all positive values that can be realized by impersonal, mechanical forces should be so realized,* in order that personal endeavour may

[1] *Op. cit.*, pp. 516–18. [2] *Op. cit.*, pp. 512–14.

[3] As he himself had formerly believed. See *Das Ressentiment im Aufbau der Moralen*, pp. 199 *ad finem* referred to above.

devote itself to the realization of the higher goods, which normally depends upon the existence of the lower.[1] This leads him, though by no means a convinced advocate of democracy, as we have seen, to the rather reluctant admission that an aristocracy "in heaven" does not preclude a democracy "on earth"; indeed, it might seem rather to require it, inasmuch as human beings are most alike in their claims to the lower values and the duties of promoting them, differ most in the qualities and aims of their spiritual personalities. If, then, such qualities can only develop where the lower needs are satisfied, the goods that satisfy such needs and the task of providing them should be distributed as equally as possible, in order to give opportunity to all for the development of their various capacities.[2]

This should not be construed as a "higher altruism," *i.e.* as a doctrine of self-development as the most effective method of promoting the welfare of the organically related whole. Scheler is emphatic in rejecting the so-called individualism of the "cult of great men," for which individual development is really a means to a super-personal good. As against this, he finds the value of society, like the value of history, in the conditions it provides for the realization of *personal* good. It is the single personalities that are the criterion of the worth of the community, not *vice versa*.[3] The ultimate, irresolvable conflict is not the conflict between the single personality and the group, but that between the different ideals of personality—the hero, the genius, and the saint. Clearly no finite personality can realize all three ideals, and, as no one can fully do justice to aims into which he cannot enter, this opposition must remain for humanity "a tragic conflict."[4] On the other hand, however, he believes that the paradox usually associated with pleasure, viz. that we fail of it by making it our aim, applies rather to the higher values than to the lower. Pleasure, so far at least as this is restricted to the lowest stratum of feeling, that of the hedonic tone of sensation, is a possible, though not a very frequent, goal of action, and can be directly attained. We can excite it by applying the appropriate stimulus, deaden pain by narcotics. It is because such feelings *can* be directly aroused, whereas the deeper strata of the emotional life, associated as they are with the whole constellation of consciousness, defy such efforts, that eudæmonistic theories of ethics usually degenerate into hedonism.[5] The real "paradox of value" is that the development of personality itself is conditional upon other aims. A person must not aim at his own moral worth, his own holiness; he can only save his soul by losing it. This will be seen to follow from the recognition that personality cannot be an object. To make it, or any aspect of it, an end would thus be self-deception. The capacity

[1] *Formalismus*, pp. 524–7. [2] *Op. cit.*, p. 530.
[3] *Op. cit.*, pp. 523–5. [4] *Op. cit.*, pp. 614–15. [5] *Op. cit.*, pp. 348–50.

to be realized through volition will therefore be in inverse ratio to the degree of value. Such notions as "working out one's own salvation," "self-perfection," and so on, cannot refer to the values in which true salvation, or perfection, consists. It is not, of course, denied that we may experience the increase of such values, but only that we can do so by making it our aim. Holiness, genius, heroism, develop through the concentration of attention and effort upon objects that transcend the personality, for they are qualities of being, not of doing. The man who aims at knowing rather than at knowledge, at self-expression rather than at beauty, at saintliness instead of at the love of God, obtains none of these things, for the technique of realization is injured by the direction of attention to it, as we know by the analogy of the simpler motor-mechanisms to which the same principle applies.[1]

The same is true, Scheler holds, of groups such as a tribe or nation, which can only realize their full capacities where their members have set aside the thought of acting as "citizens of the state," and are concentrating their attention upon the attainment of the objective goods included within the range of their ethos.[2] It is impossible, however, to enter here into the difficult doctrine of a "communal personality," by means of which he tries to effect a still more complete reconciliation between his ethical personalism and social morality. Enough has been said to illustrate the synthesis he proposes between these antithetical trends in modern ethical theory, which is probably his chief claim to attention in this field. The characteristics of the social philosophy which he has developed in his later work, *Die Wissensformen und die Gesellschaft*,[3] and in a number of shorter essays, must be reserved for discussion elsewhere.

[1] *Op. cit.*, pp. 527–9. Cf. also the later essay, *Die Formen des Wissens und die Bildung*, included in the volume *Philosophische Weltanschauung*, Bonn, 1929, p. 104: "To be cultured is not to make oneself into a work of art, *i.e.* deliberately to aim at one's own beauty, or virtue, or knowledge."

[2] *Op. cit.*, p. 528.

[3] Leipzig, 1926.

(*Concluded.*)

BELIEF

G. H. LANGLEY, M.A.

MUCH has recently been written on the subject of "belief," but since the mental attitude indicated by this term is so pervasive and important it may be useful again to reflect upon its nature and significance.

Belief is a mental attitude which arises together with the question of the nature and significance of experience. Thus belief has reference, not to immediate experience, but to judgment. Apart from the interpretation of experience, there is no question of belief or of disbelief. Belief is the mental assent which may be given or withheld from any interpretation suggested. It may be that such interpretation asserts only the minimum about any experience, or object or event in experience. It may merely state that such an experience, object, or event exists. But some judgment must be made, or there is naught that can become an object for belief. Now this attitude of mental assent or dissent implied in judgments concerning experience is necessarily connected with a practical attitude towards the objects to which such judgments refer. If the attitude of assent exists and the person holding the belief is ever placed in a situation calling for a response to the object referred to by a judgment which is believed, the belief will determine the nature of the response. It may be held, of course, that some beliefs pertain only to speculative judgments, and do not involve practical response to any object. Personally, I feel that there are fewer such beliefs than is frequently assumed, but in any case should a situation arise in which response to an object believed is demanded, the belief invariably determines the character of the response.

I

I have described belief as the mental attitude of assent implied in judgments concerning experience. Knowledge is built up of judgments concerning experience, and the definition therefore raises the question of the relation of belief to knowledge. It is not possible for me here to discuss the nature of knowledge. I use the term as referring to the systems of judgments that are based upon immediate experience and observation and our analysis of and inferences from such experience. When the experience is adequate, and observation, analysis, and inference sufficiently careful, we assume that we can

legitimately describe as knowledge the judgments which we form concerning the objects or events of such experience. I am aware that knowledge of this kind is defective in many respects, and that it may fall short of the ideal of perfect knowledge; but science is built up of systems of such judgments, and we are usually willing to admit that the scientist knows the objects, events, or principles that he has sufficiently investigated. Now it is clear that the mental attitude of assent is included in all the judgments which we dignify as knowledge, and for this reason knowledge must be regarded as a species of belief. Professor Taylor, in a very interesting paper read before the Aristotelian Society in 1928, denies that this is the case, and affirms that knowledge and believing are two quite distinct attitudes of mind; but it appears to me that he maintains this distinction only by restricting the application of the term knowledge to an ideal which is not attainable by human reason. We claim that we know when mental assent or belief is given on evidence which we regard as irrefutable. Because of the nature of the immediate experience or observation, or the clearness of the demonstration, we regard the judgment apprehended as beyond doubt. But not only is knowledge a species of belief in that mental assent is implied in the judgment known, but, further, all knowledge is erected upon a foundation of belief, and apart from certain fundamental beliefs the structure of knowledge would fall. Knowledge of the physical world, for instance, presupposes the belief that nature is uniform. It assumes as belief that if the character and laws of any substance or organism are once accurately determined, they apply to any other substance or organism of the same kind; and that a law discovered to-day will apply to-morrow or any future day. It also assumes as belief that the senses and memory are trustworthy, that careful observation is not misleading, and that human reason when logically exercised is a reliable instrument for making valid inferences. Apart from such beliefs there can be no knowledge.

It may also be noted that we apply the term knowledge to masses of information that we have acquired and which implies belief in other ways. Most of the information we possess has been acquired from books or from the testimony of others. It may be that we make certain demands before we accept the information. We may insist that the person who presents it is competent and that the witness is reliable. But when we are satisfied in respect to such matters we are prepared to accept the information as true. It thus follows that if we are prepared to regard this information as knowledge, we must admit that it assumes a further belief in the validity of the testimony. And much of the knowledge that we acquire at first-hand is also based upon belief of this kind. The knowledge of the historian who inquires into the past is based upon belief in

the trustworthinesss of the available records, and many other instances of similar basal beliefs could be given.

To sum up this argument, it appears that we apply the term knowledge when we assent to judgments the evidence for which is adequate and convincing, and that knowledge is thus a form of belief. Further, the making of such judgments implies certain fundamental beliefs apart from which they would not be valid.

II

It cannot, however, be said of every belief that it is beyond doubt and ranks as knowledge for every intelligent person to whom the evidence upon which it is based is presented. Many beliefs are held despite the fact that there is room for doubt. But for all beliefs there must be grounds for believing, and we will therefore endeavour to state some of the characteristics of the various grounds for belief.

We have defined belief as the assent which is implied in judgments concerning experience. Belief involves a certain kind of relation between a person believing and objects of experience believed, and this being the case any particular belief may be the result either of evidence as to the nature of its object, or of certain tendencies within the subject believing. I shall describe the grounds for belief as objective or subjective respectively according as they connect mainly with the evidence for the nature of the objects on the one hand or the tendencies within the subject on the other.

Among beliefs the grounds for which are objective must be placed all beliefs that are described as knowledge, and beliefs that may be regarded as imperfect forms of knowledge or that naturally culminate in knowledge. We have already referred to the fact that knowledge is based on (1) immediate experience and observation, and (2) logical inference from observed experience or demonstration. Judgments for which knowledge is claimed vary between the two limits of those that spring from immediate perception, such as this is a table or this is a tree, and those that are founded on logical demonstration, such as the judgments of mathematics, the ideal for such judgments possibly being fully articulated perception. In all these judgments it is presumed that the person judging is attempting to determine the nature of the objects, and that there is on his part willingness to allow the judgments to be shaped by such evidence as is available in regard to the nature of the objects. Scientific judgments are of this kind, and we are prepared to trust them so long as the observations are adequate and careful and the inferences and demonstrations accurate and convincing. Further, there are many beliefs that may be described as imperfect knowledge. Among these are our empirical beliefs. They

are based on experiences that are not fully articulated or understood. We observe that certain events happen again and again, and we assume that they will always happen in future. Our beliefs in the innumerable causal connections upon which we act from day to day are mostly of this kind. Then there are all the judgments that are made despite the fact that the evidence for them is imperfect. Hypotheses belong to this category. The evidence available may be capable of several explanations, and that is accepted which seems to be most satisfactory and to fit in best with the rest of our knowledge. With further evidence they might either be modified or confirmed as knowledge.

Another kind of belief for which the ground may be chiefly objective is the belief in persons which arises from acquaintance. We may often be convinced that a person whom we know intimately will act in such and such a way or that he will not act in such and such a way, although the evidence available for an outside observer might not support the conviction. There is a difference in kind between our immediate knowledge of a person and our immediate knowledge of objects of other kinds. A person is able to respond to our attitude towards him, or to prove unresponsive or antagonistic. Thus we may possess immediate experience of a person as a centre of spiritual energy, and by acquaintance may obtain an immediate knowledge of the nature of that energy which is not possible for the mere observer. This may lead to a conviction or belief which we are prepared, and rightly prepared, to hold at times against evidence to the contrary. In another essay I have shown how different powers of a person are made to function in the apprehension of different kinds of objects. For the knowledge of persons the power of sympathy is undoubtedly important. It elicits a responsiveness that admits to inner sources of action and power. But while insisting on the possibility of the ground for belief in persons being objective, I am aware that such beliefs may also arise from subjective grounds. One may believe, for instance, that a man who appears to be spoiling his career will eventually make good. The belief may be based upon a knowledge of the family to which the man belongs, the members of which have generally made good in the long run. Or it may be due to the fact that the person holding the belief is a member of the family and that he wishes so intensely that another member of his family should make good that this wish has inspired the belief. We may then turn to the consideration of the second type of ground for belief, viz. the subjective.

Subjective beliefs may be divided into two categories. In the first I would place all the beliefs which are held on subjective grounds but that refer to objects concerning which knowledge is attainable, and in the second, beliefs that refer to objects con-

cerning which knowledge is not attainable. For understanding the nature of belief the latter category is much more important than the former.

In the first category I place all superstitious beliefs—whether they be connected with religious practices or not, beliefs in magic or charms or in the repetition of mantras, and any other such beliefs. These spring from the subjective tendency of men, in the absence of knowledge, to interpret phenomena after the manner of their own experience, or from the general tendency to believe what a majority of the people belonging to a community believe. Other beliefs that should be included in the category are those that are founded on rumour or scandal, which appear to me to be promoted by the general tendency among men to believe anything that is likely to make life a little more lively and exciting, as well as many beliefs held by communities or groups of people which spring from their tendency to believe the worst about other communities or groups together with the best about themselves. It is clear that all the beliefs of this class are promoted by the "will to believe," and may tend to mislead men in their endeavour to understand their experience, but at the same time it is also clear that they are of such a kind that they must give way before advancing knowledge.

The second category contains beliefs that are vital for our mental and spiritual life, but they refer to objects concerning which knowledge is not possible. In dealing with the relation between belief and knowledge I mentioned one or two such beliefs, viz. the belief in the uniformity of nature and in the trustworthy character of normal perception. In explaining the nature of human reason, Kant pointed to ideas which are necessarily presupposed by our reasoning processes but which are not possible objects of human knowledge. Without committing myself to the views of Kant in their entirety, I maintain that he is generally right in assuming that human reasoning presupposes and necessitates belief in certain conceptions, such as the laws of thinking and a primary cause which cannot be objects of knowledge, but in the absence of which knowledge is not possible. Apart, however, from such conceptions, there are two other important classes of beliefs belonging to this category that concern our practical activities. They are (1) beliefs in values, and (2) religious beliefs. Both these kinds of belief are directed towards objects that are not capable of rational demonstration. There are three types of value that are commonly recognized, and they all agree in the fact that value must be appreciated and cannot be demonstrated. It may be possible to prove that a certain event will happen in the physical world, but it is not possible to prove, apart from appreciation, that a certain type of experience is of value. But the appreciation of values is a fact. Men do believe

in them, although I do not claim, nor is it necessary to claim, that the belief is universal. It would, I am convinced, be possible to explain the position I wish to maintain by a reference to any of the three main types of value, but I will try to indicate my meaning by a reference to moral values. In moral experience we find the recognition of a moral good and the sense of the obligation or the duty to seek the good. Further, it is often found that the seeking of the good involves sacrifice. It leads to the way of the cross rather than to the way of self-interest. Some have held that the seeking of the good ultimately leads to the maximum of pleasure for the individual seeking it and for those to whom his influence extends, but none can possibly hold that the individual seeks the good for the sake of attaining pleasure, for he is frequently obliged to sacrifice this without any assurance of future compensation. In any situation a man does not seek the good because it can be demonstrated that it is for his advantage to seek it, but simply because he is moved to seek the good by a deep inner conviction of its value which personal advantage fails to shake. The good once perceived makes an appeal to the individual, and there is that in him which responds. Further, it may here be mentioned that the nature of this response, as indeed all appreciation of values, is vitally connected with a general and pervasive belief in the purpose and significance of life. Life possesses meaning, and the seeking of the good is somehow connected with the attainment of its meaning.

But here the question may be asked: Why are beliefs in moral values classed among those for which the grounds are considered to be subjective? Is not the good objective? And is it not the character of the object which demands the response? In a sense this is the case, but it must be remembered that values do not exist apart from appreciation. They imply a partnership in which a presentation is related to a subject, and the objective character of the value is manifest only in the relation. In the appreciation of moral values the response of the individual is a vital part of the good attained. But whatever our view as to the nature of the good, it remains that the ground for the belief in the good is the conviction of the subject. It might be possible for those who wish to ignore the moral good to prove that man always is, and always should be, moved to act by self-interest, but no one can remove the inner conviction concerning the good which some possess.

The grounds for religious beliefs may appear to be still more subjective, since the objects of religious experience are often so diverse. These objects may include Spirits that are dominantly evil (such as those worshipped by primitive peoples), the deified cosmic forces of the Vedic Rishis, the Lord of Hosts of the ancient Hebrews, the tribal gods of their neighbours, and the Heavenly

Father of the Christian religion. All these varied objects claim, as supreme spiritual beings, reverence and devotion from the worshipper. Further, the object of religious faith transcends demonstrative knowledge. When scientists differ about the nature of an object, it may be possible to prove which is right by further observation and inference; but when two peoples differ in their conceptions about God, no such demonstrative proof is possible. It is possible to apprehend God, but not by the understanding alone. Further, it often happens that religious faith is strongest when the evidence that would appeal to the understanding is against it. Faith frequently triumphs over much physical suffering, moral evil, and most adverse external circumstances. Man in such circumstances believes despite the evidence rather than because of it. He believes because of his will to believe, and because belief satisfies one of his deepest needs. It follows then that in the case of the two most important kinds of human belief, viz. belief in values and religious beliefs, the grounds for belief are dominantly subjective. Attempts have been made to demonstrate the objects of such beliefs, but it will be generally agreed that men do not hold these beliefs because they are convinced of the validity of the demonstrations. They hold them because they are impelled by their entire personalities to hold them.

III

This brings us to questions with the attempt to answer which we will conclude this paper. If the grounds for many of our beliefs are inadequate for purposes of knowledge and the grounds for many others are dominantly subjective, what is the value of belief as indicating the existence and reality of its object? Is the fact that some men believe such and such satisfactory evidence that such and such *is* really as it is believed? Or, on the other hand, does a survey of the different types of belief indicate that beliefs are generally untrustworthy?[1]

[1] It follows from the fact that there are grounds in experience for all beliefs that beliefs are evidence for the objective character of certain features of experience. When the ground is dominantly objective, a belief implies the certainty that the object of reference is qualified in some definite way leading to the belief, although it may not be known to possess all the qualities attributed to it in the belief; and when the grounds are dominantly subjective, the belief implies that the mind possesses certain essential characters, and that these may be significant in regard to the nature of the object to which the belief refers. In respect to the grounds for belief, it is assumed that there is no reason for doubt, and that belief thus carries with it certainty as to the nature of these grounds; but the question here raised is: Can it be inferred from the presence of beliefs not only that they imply the existence of certain grounds, but also that they provide reliable evidence for the assumption that the objects to which they refer exist as they are believed?

In endeavouring to answer these questions, I will return to the statement made in the opening section of this paper, that belief is necessarily connected with a practical attitude towards the object of belief. Belief is vital to behaviour. Our response to a situation is determined, not by the actual character of the situation, but by our belief in regard to that character. The primitive man who believed that a malignant deity inhabited a certain tree or rock avoided these objects, and if we are suffering from malarial fever and believe that quinine is the specific we take quinine, but if we believe it to be harmful we do not. The principle may be stated as follows: At the level of reflection belief is the mind's spiritual dynamic. Apart from belief the will is paralysed, for the mind responds to any situation only according as it believes.

But what light does this view throw upon the answer to the questions we have raised? It is obvious that belief, despite the fact that for the person believing it carries the assurance that the object of belief exists as it is believed, cannot be accepted by others as adequate evidence for the existence and character of the object. Many of the objects of men's belief do not exist as they are represented in the various beliefs. Advance in knowledge has proved that objects of belief may be very different in character from that assumed in the beliefs. Does it follow then that the testimony of belief in reference to the character of its object is of no value? I for one am assured that this is not the case, but that, on the other hand, the testimony of belief is in this respect of the greatest value. In this connection I would point to the fact that no belief is ever held against knowledge.[1] In an earlier

[1] After reading this paper, a friend wrote to me: "A doubt crosses my mind as to whether you have not given the 'man in the street' credit for a larger measure of rationality than he deserves. In most of our beliefs there seems to be a very strong emotional element; so much so, in fact, that many people hang on to their beliefs long after they are furnished with evidence which rationally discredits them. If 'the wish is father to the thought,' then certainly it is often mother to the belief."

I fully admit the contention that there may be a very strong emotional element in belief, and in addition I am prepared to admit that "many people hang on to their beliefs long after they are furnished with evidence which rationally discredits them." Nevertheless, I also hold to the truth of the view here put forward that belief cannot be held against knowledge. In arriving at this opinion I have been greatly influenced by the manner in which man's rational interpretation of his experience has actually interpenetrated his spiritual experience and modified his religious beliefs. In course of time many beliefs have been abandoned and others have been changed because they have been found incompatible with the rational interpretation of experience which is regarded as true. In this connection it is important to distinguish between being "furnished with evidence which rationally discredits" and "knowing." A person's emotional bias resulting in the will to believe may resist evidence which one less prejudiced regards

part of this paper I have maintained that knowledge is a form of belief; and it has also been shown that the ground for a belief is frequently such that, when more adequately explored, it leads to knowledge. Now, since knowledge is a form of belief, it follows that no belief which is contrary to knowledge can be held by any human mind which is convinced that such knowledge is true. It is as much a law of mind that two contradictory beliefs cannot be entertained at the same time and by the same person as it is that two contradictory propositions cannot be accepted as true; and since, when knowledge contradicts belief, the grounds for knowledge are more adequate than the grounds for mere belief, the latter must give place to belief that is knowledge. But there are, as we have seen, many beliefs that transcend possible knowledge. Have such beliefs any value as evidence for the existence and character of their objects? I hold that they have, because they necessarily determine our responses to such objects. Let me illustrate this view from some simple beliefs. Many of the common causal connections which in belief are accepted by us can never be fully understood. We eat wholesome food and our bodies are nourished. It may be that we know something of the physical and physiological processes that take place, but much happens which we do not understand. Yet belief in these cases is not misleading, and the reason is obvious. Such belief springs out of behaviour, and it determines response to the objects of belief. If the response fails to lead to the satisfaction sought, consequent dissatisfaction corrects belief and also the conception of its object. Thus belief, being the mind's spiritual dynamic directing behaviour, possesses its own corrective influence and modifies itself until such time as the responses it determines are perfectly adjusted to its objects. A little reflection will, I think, show that this is true of all our simple beliefs. In view of the fact that they determine action, such beliefs are ever tending to approximate more nearly to truth, apart altogether from the fact that by further determination of their grounds they may be converted into knowledge.

But what of the beliefs that refer to objects that transcend possible knowledge? Have they any value as indicating the nature of their objects? I maintain that they have, and for the same reason; and to illustrate this view let me refer again to moral and

as rationally discrediting his beliefs; but it does not follow that the prejudiced person who retains the beliefs himself possesses the knowledge which discredits them. For instance, a person may hold to certain dogmatic religious beliefs and resist evidence supporting scientific principles which are incompatible with these beliefs. I maintain, however, that such a person does not possess knowledge of the scientific propositions. If he were satisfied that these are true, he would, like the scientist, be obliged to abandon or modify the dogmatic beliefs with which they are incompatible.

religious beliefs. Moral beliefs determine our behaviour in relation to other human beings in society, and such behaviour must lead to experience which either gives, or fails to give, satisfaction. In so far as the latter is the case, I hold that there is necessarily a tendency to modify the beliefs until such time as they lead to conduct that harmonizes man with man, and thus to the satisfaction of those who possess them. The same principle is true in regard to religious beliefs. They lead the believer to relate his whole personality to the Being whom he regards as the Greatest and Best. Thus he attains an experience, usually described as spiritual, which either satisfies or fails to satisfy. In so far as the resultant experience does not satisfy, there is in this sphere also the tendency to modify belief in such manner that the experience becomes satisfying. And when, from year to year and from age to age, religious beliefs have led to experience which satisfies, has anyone, in the absence of knowledge to the contrary, the right to assume that they are not true? Let me further emphasize this point. Man relates himself to the objects of his moral and religious experience not with his intellect alone, but with his whole personality. It follows, therefore, that the objects of moral and religious belief can never be fully articulated by man's discursive thought, and thus cannot be completely understood; nevertheless, they are objects towards which his whole being goes forth in complete and willing response, and in which he trusts to find satisfaction for his deepest needs. If, in experiences resulting from moral and religious beliefs, the satisfaction sought be not forthcoming, the beliefs must eventually be changed; but if, on the other hand, throughout life satisfaction be constantly found by the believer, and especially if in addition his experience be shared by many others possessing similar beliefs, the beliefs persist, and I am convinced that their persistence is some guarantee that the objects to which they refer exist as they are believed.

It may be maintained that I am merely applying a pragmatic test to belief and am assuming that any belief is true simply because it works. The view put forward may be pragmatic, but I hold that it is only pragmatic in the sense that all careful thinkers are pragmatists. In explaining the events of the natural world we accept as true the explanations which best interpret what is presented to us, provided they fit in with the rest of our organized knowledge. As long as an explanation works in this way we continue to accept it as true; but we are prepared to abandon it if other facts are subsequently presented which make another explanation more probable. We do not dogmatically affirm that all accepted explanations are absolutely true, but we hold that they are more likely to be true than explanations which provide less satisfactory interpretations of the events presented or such as fail to harmonize with the rest

of our organized knowledge. Our view of belief is essentially akin to this recognized principle. Obviously beliefs are not true merely because they are believed. Many have subsequently to be abandoned. But beliefs which enable us to adjust ourselves to the world in which we live are more likely to be true than those which lead to maladjustment. By thought and behaviour we admit this principle from day to day in respect to our simple beliefs; and I hold that there is no reason why the principle should not be true in respect to those beliefs which call forth in us what is deepest and best and which enable us to harmonize our lives with the great universe in which we have our being.

In this essay I have attempted to show that the essential mental attitude which we describe as belief is, at the level of reflection, pervasive of the human mind. It is vital to the conscious behaviour whereby man adjusts himself to his world, and knowledge is a form of belief. Belief as present in moral and religious experience is essentially akin to the more simple forms of belief in ordinary experience. The value of belief as it appears in ordinary experience is admitted by all, since it enables man to adjust his behaviour to the world in which he lives, and for a similar reason, so long as belief as it appears in the higher forms of experience is not known to be irrational, its value also seems to be beyond doubt.

IMMANENCE AND TRANSCENDENCE

PHILIP LEON, M.A.

THE following is an attempt at an analysis of some of the difficulties of a certain religious or metaphysical attitude which, common as it has been to many ages, and familiar as we are with it in what we know of the early Greek thinkers and the Sophists, may yet, in the status of settled and almost universally accepted dogma which it has assumed, be said to be the peculiar inheritance of our own generation. We meet it in formal philosophic garb in Alexander's *Space, Time and Deity* and in Croce's idealism; with scientific claims it confronts us in Smuts's *Holism*;[1] with more emphasis but less exactness it speaks in J. S. Huxley's *Religion without Revelation* and in Middleton Murry's *God, Being an Introduction to the Science of Metabiology*; in imaginative literature it has found its ample "iconography" in Shaw's *Back to Methuselah;* best of all, strong and silent, unquestioned and unexplaining, like any master secure of his position, we may find it enthroned each in his own mind. Though here referred to as a religious attitude, we may also call it anti-religion or the religion of the professedly anti-religious, and its God the God of the "Godless." For, whatever other influence may have severally fashioned us into this mode of thought, we have all, directly or indirectly, nearly or remotely, come under the working of the "rationalist" anti-religious movement; we all hold strongly the Lucretian conviction *"tantum religio potuit suadere malorum"*; whatever of good we may be prepared to accept from the substance, we all shrink at least from the names, of "religion" and "God," persuaded as we are that where these come in, reason goes out and emotion and prejudice rule.

This conviction, however (and we should do an immense service to ourselves by recognizing this), whatever its scientific or logical antecedents may have been, and however cool and impartial it may appear in outward expression, is by now itself an emotional prejudice, an *odium theologicum* against theology. It should be analysed and stripped of the diffusiveness belonging to all emotion and therefore to every antipathy, and also of that other power of emotion of magically turning certain names into centres of attraction or, as in this case, of repulsion. When this is done, the opposition, at least in many cases, turns out to be in essence not against all theology or religion, but only against a special kind, against the

[1] This treatise, however, does not claim to be metaphysics.

theology of a God above, outside, or other than, the Universe. A theology of an immanent God within, or identical with, the Universe is sure of a welcome, especially if it eschews traditional terminology and disguises all connection with known traditional thought. It is transcendent religion rather than religion as such that is the *bête noire*. Immanentism, rather than anything that may rightly be called atheism or agnosticism or indifference, has conquered. To the public, whose ideas are more easily moulded by literature than by philosophy or theology, this immanentism has come largely from the English Romantic movement, of which it constituted the inspiration, depth and strength, the *"frisson métaphysique,"* and the deliverance from the arid eighteenth-century idea of a completely extra-mundane Deity. Though in our own time reinforced and tinged by Far-Eastern pantheisms, it may be said to be an inevitable outcome of Christianity or of the emphasis of the latter upon the humanity of God and the inwardness of religion or the Kingdom of God within us. In this form it finds what is perhaps its most appealing expression in Blake's lines:—

> For Mercy, Pity, Peace, and Love
> Is God our Father dear,
> And Mercy, Pity, Peace, and Love
> Is Man His child and care.

Even when professing to be agnosticism or anti-religion, it is often, though not always, only a protest against transcendent religion conceived as fantastic other-worldliness and superstition, as a divagation into the void away from human efforts, values and significance.

Humanism, this-worldliness and one-worldliness, a monism which struggles against being broken up into a dualism such as that of God and the World, or Heaven and Earth, or Reality and Appearance, or the Eternal and the Temporal, in short a revolt against a bi-cameral cosmic constitution with a House of Lords and a House of Commons, this is what has here been referred to as the immanentism informing much of recent formal philosophy as well as amateur philosophies and theologies and imaginative literature. Religious it may be called, not only for the reasons given above, but also because any ultimate *Weltanschauung* has a claim to that title. The question asked here is whether this levelling unitarianism can be persisted in, whether some fundamental dualism, something answering to transcendence in theology, must not be frankly accepted by any *Weltanschauung* that would either replace or, with some re-valuation, retain something from religion and the concept of God.

What, for the purpose of our question, need we ourselves retain?

Much already discarded in current thought we do not need: the rôle of God as Creator and the attributes of omnipotence and omniscience, with all the issueless problems centring round these. But we can also dispense with much which has been kept or reintroduced: "the religious" or "mystical experience" (conceived as a specific experience like the moral or æsthetic experience, and invoked often even by those who profess not to have had it) and the new supernaturalism based on Spiritualism and psychic phenomena. What alone is relevant is: the concept of God as Pure Value (whether conceived concretely as Personality or more abstractly as the principle of Truth, Goodness and Beauty) and the acceptance or appreciation of value as ultimate, an attitude which is made up both of judgment and feeling and under which may perhaps be included even the experience of the holy or sacred, worship and prayer, inspiration, revelation, conversion and grace, sin and redemption, though whether such inclusion be warranted or not need not here be discussed. It may be that we have here kept but the minimum of what is meant by God and religion. But it cannot be denied that this minimum is the heart of the matter as well as the connecting-link between philosophy and religion. Moreover, in limiting ourselves to it we have the advantage of limiting ourselves to something that is really universal. "The religious experience" is often said to be peculiar to some people only; but the attitude of valuing something as ultimately right or good, of judging that something *should be* or *ought to be done*, and of claiming some fundamental sanction for such judgment (though there be only one judgment, namely that we should *not* make such judgments, that it is not right to distinguish between right and wrong, good and bad), this attitude is a constituent of intelligence as basic and as universal as at least the experience of beauty or of number[1]. So long as we allow the judgment of value to be irreducible and do not admit that the "right" or the "good" means simply that which is desired, whether by the individual or by society, so long do we continue to hold common ground with the most developed religion. By God, then, we mean here Pure Value, and by Pure Value that which in itself is value, the ultimately good or right or perfect, and the Ground of anything that is this; further, we mean that which is value only, with no admixture of anything else. And we ask whether God so conceived can be merely immanent.

Not that the question for general untechnical thought, to which

[1] Those who profess to make much of "the religious experience" and of its deliverances really only consider it *qua* experience the object of which is supreme value, just as we are doing. Experiences the objects of which are demons or devils or a plurality of gods, though they too have a claim to rank in the genus "religious" or "mystical," are not counted. Dean Inge rejects "Asiatic" and Roman Catholic mysticism (in *Christian Mysticism*).

more particularly we wish to point here, is ever formulated in such theological terms. Nevertheless, it is precisely this immanentism that confronts us whenever that for which final goodness or rightness or value is claimed is said to be demanded or backed by the Universe, to be in accordance or in harmony with the nature or with the heart of things, to have cosmic significance. The expressions are many, but the idea is one: that of God (Pure Value or the Ground of value) as merely immanent, that is, identical with the Universe or with an aspect of the Universe.

The first alternative, identity with the Universe, is pantheism. And pantheism we need not linger over; for, in the West at least, and in any expression which aims at consistency, it has not gained general acceptance. Whatever else is meant by "the Universe" (it is, of course, a term which, like so many current terms, is a complete metaphysic while pretending to have nothing to do with metaphysics or to be pre-metaphysical), it means, as commonly used, at least the spatio-temporal process, that which happens or has happened. Now this is far too obviously and insistently faulty for it to be identified all with God or Pure Value in the sense that every and any part of it, its brutality, savagery, madness, destructiveness, is pure value or the ground or supporter or expression of this. Pantheism means pan-optimism, an indulgence which is certainly not for our age, calamitous, chastened and critical. We look for God or the Ground of value not in any and every but in some specific element or aspect of the Universe. It is then that our position may be entitled immanentist in the stricter sense of that term.

The aspect singled out is central or controlling. It is the heart or core of things, the *élan vital*, the *Life Force*, the principle of growth or development, the correlating activity, the holistic principle, the *nisus* towards Deity. The philosophies which these phrases recall all have the following in common: they are extreme generalizations of the theory of evolution with its optimistic faith in progress; they assume that there is a Universe, that is, that all entities form a unity or system; that the principle of this is good or makes for good; and that this Universe is a one-level and not a bicameral Universe, one which they exhibit as possessing indeed a hierarchy of degrees (in Alexander's scheme each higher entity is, as it were, the square of the lower), but overtly at least as showing no rift such as that between Reality and Appearance, Heaven and Earth, Form and Matter, etc. Some of the objections to which these philosophies are subject must here be mentioned. In the first place their assumption of any Universe at all is all too facile, especially after William James's forcible championing of the claims of Pluralism. In the second place, although they pretend to be merely scientific descriptions of the "facts" with no element of *a priorism*, it is more than

doubtful whether the "facts" justify the central and controlling rôle assigned in these philosophies to value which is after all quantitatively not predominant in the Universe. The real place in it of value may be that of head, but of a pin-head to a gigantic body. Considering the immense amount of mere matter and the minute portion of consciousness in which alone value is generally supposed to reside, must we not, at this level of thought, think of the Universe as a microcephalic giant? Or value may be the base, but with a function such as is attributed to it in these lines:—

> Strive, Virtue, strive; o'ercome all bars.
> Upon thy stalwart shoulders, limp
> Tyrant, vile huckster, harlot, pimp,
> Shall rollick nearer to the stars.

Or it may be only an accidental biological variation. Thirdly, if value is central and controlling, are we not back at pantheism or pan-optimism? For if the heart or core of the Universe is good, then the Universe as such is good. It is only difficult to understand how there comes to be anything in it that is not good. And the difficulty, with only the terminology altered, is precisely the same as that of understanding how a perfectly good God can have created or be responsible for a world with so much in it that is bad. Indeed (and this is the fourth and chief objection), we do not eliminate but only hide dualism such as that between God and the World. The concealment is successful only so long as we refrain from examining the relation between the *nisus* or holistic principle and the rest of the Universe. A careful scrutiny shows us the *Nisus*, Holistic Principle, Life Force or *Élan Vital* (the capitals are always deserved though not always used), creeping in first as merely a feature of the Universe, a fact amongst other facts, but soon becoming a Super-fact beyond and above all facts, an untier of metaphysical knots, a full-blown DEUS, but not *ex* or *in machina*, as is pretended, but *supra machinam*. The *Nisus* "remains, the many change and pass." Whatever happens, it is the same; it has no beginning and no end; it is not really in space or time or in the Universe. Its sole function is to create and presumably sustain values, while the destruction of values is apparently not due to it. The dualism between God (the *Nisus*, that καινὸν δαιμόνιον) and the World is present in full.

Perhaps that theory alone avoids the dualism, which is not too ambitious for unity and is content with a Universe which is a collocation. In the latter values, good experiences, right actions, etc., would be present just as trees, chairs, electrons, green and hot, round and square, no more and no less "central," controlling, "significant" or "fundamental" than any of these. Such a theory would certainly

have the merit of not attempting a premature ordering before all the *ordinanda* are to hand. But can values still be values with merely such a rank? Is it not rather precisely the placing of them thus that makes it immediately plain why value necessitates dualism and transcendence?

It would seem that values necessarily imply some sanction or support, something intended by the old-fashioned theory of rewards and punishments or by the Biblical promise of enduring, increasing, and multiplying, or by the idea of storing up merit. This something we may subtilize and sublimate; but if we do away with it altogether, then, it seems, values must wither and die; or rather, they confront us as so many surds, not to say absurdities; what we say or feel about them cannot be entirely intelligible. When we speak of an experience as worth while (it may be only because of its pleasureableness) or of a certain act as right, we seem to be saying more than we do when we say that the leaf is green or that bodies are subject to the law of gravitation. Provided we do not mean merely that we desire the experience or act, it would seem that we claim that it is specially supported by the Universe or the nature of things, that it is in the main line of development, that it, or at least its consequences, will endure in some special way as a special contribution. We claim, that is, immanent sanction for it such as has already been discussed. But supposing that we give up this claim to immanent sanction, as we must when we are convinced that there is no main line of development, or that what we call the Universe will in a moment or in some million years pass away like a puff of smoke, do we still say that one thing is more worth while than another, an act of heroism more than a piece of meanness, being keenly alive more than being lethargic, a moment of superb beauty more than an age of dullness? Assuredly we do say it and most strongly feel it. And nowhere perhaps has it been more strongly said than in the magnificent rhetoric of Bertrand Russell's *A Free Man's Worship* in which the Universe is represented not as a puff of smoke, but as a blast of poison-gas. But do we abandon all claim to sanction? We certainly expect none from the puff of smoke. But we also mean that this is not all there is to it. We mean that the puff of smoke is irrelevant, that what is worth while is no part of it, but is rooted in another region, blooms under another clime, endures in a different dimension of Being. Claiming no support from the Universe, we are certain of it from elsewhere. We set up a Heaven above the Earth. Or these metaphors may be better replaced by an analogy: Just as in saying of anything that it is round or square, up or down, to the right or left, we mean that it is in a continuum which is throughout spatial and not at intervals non-spatial, so in calling anything good or right or reasonable or valuable we mean that it is in a medium

which is throughout good or right or reasonable, or, in short, pure value. Such a medium is the Ground of value. Location in it is the reward, support, sanction, the fufilment of the Biblical promise spoken of. If we are convinced that the world of common experience, of history or of science is not a medium which is throughout value, we posit another which is, and we thus get the dualism of that which is wholly value and of that which in parts at least is not value. Such is the essential implication or overtone of any judgment of value which is not content with or does not expect immanent sanction. As soon as we try to truncate such a judgment of this otherworldly (this is assuredly the justest term) significance, it droops and dies. The good becomes for us merely that which is desired. For proof of the truth of what is here maintained we can only point to the experience (both judgment and feeling) of which the above is no more than a description. It is significant that in Bertrand Russell's paper referred to above, in which no more is assumed than that "good" and "right" have a meaning of their own, a dualism such as that here mentioned—between "eternal things" and the objects of "temporary desire"—forces its way through in his language, in spite of the writer and in spite of the fact that in his philosophy there is no room for it. It is even more significant that in his later more guarded expressions the suggestion of such dualism has been eliminated, but only with the elimination of the idea that "good" and "right" have any *sui generis* meaning: "Primarily we call something 'good' when we desire it . . . 'good' comes to apply to things desired by the whole of a social group" (*Outline of Philosophy*, chapter xxii).

Between Heaven and Earth there is a third region for values, a Limbo, the Limbo of ideals, and this is perhaps the favourite refuge of much of recent speculation, especially of the uncritical kind to which we would here draw attention. Pure Value or Perfection or God is neither the whole of the Universe, nor its centre, nor again merely part of it like a tree or molecule, nor with a reality like that of such an object, nor, on the other hand, not in the Universe. It is an ideal. It is not physical nature that is God, Perfection without flaw or lack, light utterly without any darkness. The Universe first becomes God in man. But not in any ordinary man of flesh and blood. For if all men are not liars, they are at least all imperfect. The Universe becomes God in man's ideals. This trend of thought gains some prestige from a vague suggestion of affinity with Platonism. Yet undoubtedly it means to avoid Plato's sharp dualism and transcendentalism. Ideals are not Platonic *Ideas*. They are ideas in our minds. Thus, since we are parts of the Universe, they are too. And yet they are not quite this, since they are only ideas. They have not, however, Being in a world of their own different from and

independent of us and the rest of the Universe, since they need us in whom they are to be ideas or ideals.

It is possible to expose the difficulties of this position without setting forth any special theory of knowledge. Whatever be our epistemology, we must try and allow for the difference between having a mere idea when we are dreaming and having an idea *of* something as, for example, when we are giving an account of a really existing tree, the British constitution, the composition of water. In the second case there may be, either in the same mind or in different minds, many ideas which, unlike dreams, do not merely differ from each other but conflict with, contradict and correct, each other, and have a common point of reference which has legislative power, saying what the idea shall be and which idea shall be given preference; it is this common point which is ordinarily said to be the real object "about" which the ideas are. Now if all men had but one ideal of Perfection or of God, or if ideals were many but considered merely to differ from each other, we could class ideals with dreams. But about Perfection or God we argue with, contradict and correct each other (we do so whenever we argue as to what is really right or good or reasonable), just as we do about the existing tree, the British constitution or the composition of water. It is therefore with ideas of these rather than with dreams that ideals must be classed. If these are said to have objective Being, we must say the same of the object of ideals, Perfection or God, the really right or good or reasonable. If, for reasons already considered, we decide that the abode of the latter cannot be the ordinary world of objects, it must be another world. The mode of Being may be different for the two worlds; but with regard to "objectivity," dependence upon or independence of "minds," they are the same. The explanation of ideals as mere ideas leads nowhere.

We may now sum up: We have tried to consider a very widely diffused mode of thought which is even more potent in its uncrystallized form than in any strict philosophic formulation. That is why we have preferred to give it in the fluid impressionistic language of metaphor rather than in any would-be exact terminology. We have protested that so long as we wish to do justice to the concept of God or what, for the limited scope of this argument, is the same, the concept of value, we must frankly and sharply admit a certain dualism and not try and lump everything together under the name of the Universe, or the Whole, or Totality, or the Absolute,[1] unless

[1] Absolutism is also, of course, an attempt at the kind of Monism here meant. But in spite of its greater impressiveness, it is more faint-hearted and less persistent than any of the theories alluded to, because it immediately and openly readmits the dualism in even more violent form: Reality and Appearance.

we wish to be landed in inextricable confusion. The dualism has been variously conceived and named: God Transcendent and the World, Heaven and Earth, Reality and Appearance, Form and Matter, the Eternal and the Temporal, etc., most recently Subsistence and Existence, and perhaps also Whitehead's Primordial nature of God and Consequent nature of God. The opposition is not, of course, in all cases the same. But its essence in all cases is the contrast between pure value and that which is not wholly value. Also it is from a consideration of value that it receives most of its force. The first and perhaps the most forcible systematic exposition of the dualism and of transcendence is Plato's philosophy, and the latter is essentially a philosophy of values. It is a mistake to try and minimize the Platonic dualism or *χωρισμός*, as is being done by the friends of immanentism. Plato's importance in the history of philosophy is due precisely to this *χωρισμός*.

Because of its importance we must repeat what has already been intimated. The consequences here drawn from values follow from them irrespective of any special theory of values or ethics (hedonism, eudæmonism, intuitionism, etc.). It does not matter what we say is good or right or reasonable or valuable. What matters is that we admit that these words have a meaning of their own, that they are not synonyms of something else or *voces nihili*. We may say that only pleasure is good or that whatever we desire is good, that it is right or reasonable or proper that we should pursue each his own pleasure or each whatever he desires. Provided we do not mean respectively by these judgments merely that only pleasure is desired, or that whatever we desire is desired, or that we desire to pursue our pleasure, or that we desire to pursue whatever we desire to pursue, then, by good, right or reasonable or proper we mean something which implies sanction or support, that is, location in a medium wholly good, right, reasonable or proper, a medium set over against or above the ordinary world.

We may conclude with a corollary. With the metaphysical dualism here alluded to goes another dualism, an epistemological one, included in, if not identical with, the contrast between empirical and *a priori* knowledge. What this contrast means in general it is difficult to say. But partly at least it is the contrast between knowledge of what is merely fact and knowledge of what is good or value. The distinction here is clear: knowledge of fact is not and does not necessarily yield knowledge of what is good; the latter knowledge is independent of the former, and in some sense may also be said to be prior to it. In so far as *a priori* knowledge means knowledge of value, it is a corollary to what has already been said, that Metaphysics must be largely *a priori*. It is wrong to fume against *a priorism* in philosophy and to protest that the latter should wait for the "facts," always

the "facts." Provided we make distinction where distinction should be made, we ought rather to insist that Metaphysics is largely axiology or a normative science, and *qua* such, *a priori*, and that like all normative sciences, far more than to have all the "facts," it needs, in order to understand whatever it has to understand, an intuition, divination or revelation, of Pure Value or of God.

DISCUSSION

A NOTE ON DIALECTIC AND IMAGINATION

In his article "On Fundamentals" in the October number of *Philosophy*, Mr. Douglas Fawcett has given an interesting and luminous account of his general attitude in speculative thought. It should, of course, be considered in connection with the fuller statements that he has made in his book on *Divine Imagining* and in his *Zermatt Dialogues*. As he has referred, among other things, to a statement of mine about the philosophy of Hegel, I may perhaps be allowed to give a brief explanation of what I meant. That statement was, of course, far too summary to be taken as a satisfactory indication either of my general view of the Hegelian system or of the way in which it may be brought into relation to Mr. Fawcett's theory of imaginative creation. I think it may be worth while to try to explain this. I do not profess to be, in any complete sense, a follower of Hegel. As Edward Caird—certainly one of his best interpreters—stated emphatically in his little book about Hegel, "The days of discipleship are past." I have certainly no wish to revive them. But I still consider the *Logic* of Hegel to be one of the greatest contributions to philosophic thought that have ever been made; and I think it is to be regretted that Mr. Fawcett has not adequately appreciated it. When it is properly interpreted as a critical examination of fundamental concepts, it seems to me to be an almost necessary preliminary to Mr. Fawcett's substitution of the idea of imaginative creation for that of intellectual synthesis. Hegel's *Logic* should be considered in connection with his *History of Philosophy*, in which he seems to me to have shown convincingly how the leading conceptions that are criticized in the *Logic* had been used by successive philosophers in the evolution of speculative thought. The general conclusion to which this study points is that the ultimate interpretative principle can only be found in self-conscious Intelligence.

To say this, however, is not to say that when this result has been reached the ladder by which we have climbed up may safely be removed. We can hardly avoid—as even Mr. Fawsett admits—making some use of such concepts as Existence and Non-existence, Substance, Cause, Quantity, Quality, Development, and the like. But no one of them, taken by itself, carries us very far in the way of furnishing us with any complete understanding of the nature of Reality. So far, I think, the Dialectic of Hegel carries conviction. Unfortunately, however, the positive result to which it leads is not made sufficiently clear by Hegel. It is for this reason that the followers of Hegel have fallen into two groups, Hegelians of the Right and Hegelians of the Left. I am assuming that those of the Right are right. But it is not at all certain that Hegel himself would have agreed with this. Self-conscious Intelligence, at any rate, seems to be the final conception. Now, that self-conscious Intelligence can be regarded as an explanatory principle may be readily conceded. It is the principle that operates in human life, and it may easily be supposed to have a much wider field of operation. But how exactly is it to be applied? On this it seems to me that Hegel did not provide us with any adequate explanation. He proceeded to give an account of the

sub-human world (*Philosophy of Nature*), and afterwards of the human world (*Philosophy of History*), without showing at all clearly how self-conscious Mind, simply as such, can be regarded as explaining or giving rise to either Nature or Human Life. In order to do this, it would seem that the structure of self-conscious Mind has to be more fully considered. In particular, it must be shown to possess a creative aspect; and what I understand Mr. Fawcett to maintain is that this creative aspect is best conceived as a form of Imagination. With this I am certainly inclined to agree; but I think it is important to note the exact sense in which creative Imagination is to be understood. Shakespeare, who might be supposed to know, has told us that

> The lunatic, the lover and the poet
> Are of imagination all compact.

In a sense, this may be true; but it seems clear that the kind of imagination that is used in these three cases is not quite the same, and that imagination is used by many people who cannot properly be included in any of these classes. Tyndall wrote a well-known essay on "The Scientific Use of Imagination"; and what Mr. Fawcett is urging is that it has a philosophical use as well. With this I am disposed to agree. Indeed, I urged it in my book on the *Elements of Constructive Philosophy*, which was published almost simultaneously with the first statement of Mr. Fawcett's theory; and I had been endeavouring to develop the theory a good many years before that book was published. I gather that Dr. Schiller also, who approaches the subject from a somewhat different angle, is inclined to accept the same conclusion. We arrive at that view, as Mr. Fawcett admits, by thought; and it seems to me that Hegel, in his *Logic*, has given the best account of the way in which thought leads up to it. But Hegel was content to urge that the ultimate explanatory principle is to be found in self-conscious Mind. He did not go on to consider, at all definitely, what aspect of Mind can properly be regarded as creative. Fichte had already suggested that *Will* should be regarded as the creative aspect of Mind; and the same answer was afterwards given, though in a very different way, by Schopenhauer. Mr. Fawcett, who does not associate himself with any of these writers, though perhaps he is more nearly in agreement with Fichte than with any of the others, is content to emphasize Imagination. I should be quite ready to accept Fichte's view as a starting-point. But Will seems to imply purpose; and the purpose of a creative Intelligence can hardly be supposed to be anything else than the realization of some ultimate Good. Now, Dr. G. E. Moore may be right in thinking that Good cannot be defined in terms of anything more intelligible than itself. Perhaps we cannot even imagine what the ultimate Good in which our wills could find satisfaction would be. But we may at least suppose that the creative Intelligence is capable of imagining it. It is not quite clear to me whether Mr. Fawcett would admit this. He appears to regard the idea of Good as a quite subordinate conception which emerges at a certain point in the evolutionary process. I should certainly be disposed to admit that the idea of Good is implicitly present wherever there is conscious purpose; and it can hardly be denied that there is some degree of conscious purpose even below the level of definite volition. But I doubt whether the idea of Good can be said to be, in any definite sense, present in the animal consciousness.

The evolution of life is evidently a very gradual process. Sir J. Arthur Thomson has suggested, in his very interesting book on *Scientific Riddles* (p. 378), that the "God of Evolution" should be thought of, not as "I am

that I am," but rather as "I will be that I will be." This seems to me to be a somewhat rash innovation. If we are right in thinking of the Creative Intelligence as "Divine Imagining," it is probably right to think of the creative process as a gradual evolution leading up to results that we cannot, with any definiteness, foresee. It will be what it will be. But the Divine Imagining itself cannot be supposed to be directly involved as an element within the evolutionary process. Here, it seems to me, Mr. Fawcett is on safer ground. Shakespeare was, in a quite intelligible sense, a creative artist, and, in his own phase, was "of imagination all compact"; and that he underwent an evolutionary process in the course of his creative activity is obvious enough. But surely the supreme Creative Intelligence cannot be supposed to undergo evolution in any similar sense. "I am" is, no doubt, a very imperfect expression. Mere Being, as Hegel taught us, is the lowest of all the logical concepts. But "Creative Intelligence" is a very lofty one, and we need not suppose that it calls for any further evolution. It may surely be regarded as subsisting eternally. But it may be better not to use any such descriptive expression. Here, I think, Mr. Fawcett is quite right. "Creative Imagination" is a sufficient designation. It is above temporal qualifications; it neither "is" nor "will be." I believe Mr. Fawcett is right also in believing that reasoning is not to be ascribed to it. It may be held to intuit what it creates. Professor Radhakrishnan is probably right in contending that even the human intelligence, in its highest developments, exercises what he calls "creative intuition" rather than discursive thought.

In connection with this, it may be well to refer to some recent developments in scientific research. The hard, unanalysable atom appears to have finally disappeared. To think of the universe as "full of a number of things" is now definitely recognized as childish. It is not a collection, but rather a *flow*. The old saying of Heraclitus that "all things flow" (πάντα ῥεῖ) seems to be finally established as a verifiable truth. It is for this reason, I believe, that the calculus is now recognized as the great instrument of scientific analysis, for it is the calculus that enables us to deal scientifically with things that are in flux. The recognition of this has led to a somewhat new way of interpreting the creative process. Plato was inclined to think that "God geometrizes." It now seems more appropriate to think of the Divine Intelligence as making use of the calculus. But such a way of thinking is probably quite erroneous. Mathematical methods are human contrivances for dealing scientifically with complicated modes of existence. It would be extremely rash to ascribe any such methods to the Creative Intelligence. Here, it seems to me, Mr. Fawcett is entirely right. It is constructive Imagination, or at least creative Intuition, that enables us to have any intelligent vision of Reality. But we, as limited human intelligences, need also mathematical methods; and I believe we need the Hegelian Dialectic as well. "Man is not as God, but then most Godlike being most a man." We have to start at least from the human point of view. Mr. Fawcett, of course, does not deny this; but I think he sometimes tends to ignore it. At least he seems to despise the methods of patient analysis and synthesis that mathematicians have to undertake in their scientific investigations, and that Hegel undertook in his *Logic*.

I may add that I quite agree with Dr. J. E. Turner in his contention that Hegel did not, by any means, despise Imagination. I think it is true that his treatment of aesthetics is one of his best and most appreciative contributions to philosophic thought. Mr. Fawcett also recognizes that, though the Divine Imagining may have no need to reason, it is very necessary for *us* to go through a certain amount of thinking before we can attain to any

clear insight. But he seems to believe that this work may be safely reduced to a minimum, and that some apology is needed for undertaking it at all. Perhaps Hegel fell into the opposite error of supposing that logical criticism is enough to lead us to all truth. A carefully constructed ladder is necessary to lead us up to the hill of vision; but the vision itself is, no doubt, imaginative rather than either mathematical or logical. Both mathematics and logic are instruments for the attainment of truth; but obviously they are not substitutes for imaginative insight. Most of us, I believe, are still in need of Hegel and the mathematicians, and of detailed scientific analysis and historical research as well as of Mr. Fawcett. But we certainly seem to have reached a point at which it is possible to effect a synthesis between observation and experiment, mathematical analysis, historical research, dialectical criticism, and imaginative intuition; and by means of these to gain a more complete insight into the nature of Reality in its two main forms of Nature and human History.

J. S. Mackenzie.

PHILOSOPHICAL SURVEY

PHILOSOPHY IN FRANCE

M. MEYERSON'S THEORY OF COGNITION

M. Émile Meyerson is a voluminous writer: his published works run into nearly three thousand pages. The thesis they are intended not merely to illustrate but emphatically to justify can, however, be formulated in a few lines. It is, perhaps, the method by which he seeks to establish that thesis which necessitated four works of the total dimension of *Identité et Réalité*, *De l'Explication dans les Sciences*, *La Déduction relativiste*, and his last three volumes, *Du Cheminement de la Pensée*.[1] His procedure is, briefly, to show how well his thesis 'fits the facts' if we will but take the pains to examine in detail the character of knowing and knowledge acquired by consulting the histories of the several sciences, the procedures adopted by men of science and their reasons for having adopted them, the researches of logicians and epistemologists from antiquity down to our own times, and the construction of philosophical theories which have influenced posterity in its conceptions of scientific method as well as in its metaphysics. It is, then, on the *cheminement de la pensée*, its actual advancement and the conditions of it, the element of novelty in new knowledge, all in relation to explanatory and rational activity *pris sur le vif*, that he lavishes his stupendous energy and a scientific erudition probably unmatched by any living writer on the epistemology of the sciences. And M. Meyerson well knows how to exploit to the utmost the resources of this amazingly varied and extensive erudition. We have in his works, indeed, not one more, alternative interpretation—generalized from 'post-mortem' examinations of acquired results—of what the several sciences can contribute to our understanding of the world, but a reconstruction of the very processes operative in their acquirement, with an estimation of their results when due allowance has been made for the contextual factors in reality that were, wittingly and unwittingly, set aside as 'negligible.'

The central thesis is that all rational activity is essentially and irreducibly one which attempts to elicit identity from and within that which is given as diverse. The attempt can never more than partially succeed; the measure of its success, and consequently the degree of the intellectual satisfaction it yields, varies directly with the measure in which it has been able, by 'relevant' selection and rejection, to impose identity. Explanatory activity proper is always an *opération identificatrice*. This thesis presupposes two subordinate ones, the first being entailed by this view of cognition itself, the other by a view of the character of that about which it is operative. It is fundamental for M. Meyerson that thinking is '*chosiste*,' that the descriptive view of science is inadequate, and that 'explanation' by laws at best marks a provisional stage, eventually to be supplanted by explanation in terms of things and causes. For every problem 'solved' to the satisfaction of the Positivist demand, there arises a fresh one, and this of such a character that it cannot be settled, even theoretically, within the terms which Positivism allows. Secondly, in the actual process of explanation, obstacles of a factual

[1] E. Meyerson: *Du Cheminement de la Pensée*. Paris: Felix Alcan. 1931. 3 vols. Pp. xxvii + 1036. 130 fr.

sort, inherent in the materials on which cognition is operative, are constantly recurring. And it is these irrationals that resist a completion of the identifying process. The rôle of irrationals is not only epistemic, but also constitutive, and the persistence of *some or other* irrationals is presupposed by the very possibility of knowledge.

This is, quite summarily, the theory M. Meyerson has illustrated by reference to the past and present positions of natural science in his previous books. It is the same theses he now takes up again, with a view to showing how fully they accord with various representative writings on logic and methodology and with the philosophy of mathematics.

All explanatory effort, whether of common sense or of science, seeks to discover a partial identity in what is factually diverse. The Kantian view that reason can find intelligible only what reason has itself produced in accordance with the principles of its own constitution and operation, finds an echo in M. Meyerson's declaration (I, p. 91) that "reason alone is incapable of diversifying, of creating diversity," it can proceed "only from the identical to the identical," hence, that equality as expressed in mathematical equations is its normal *forme de prédilection*. Again, all explanatory effort is ultimately operative about what is yielded by perception; this is always perceived as being diverse and perforce continues so. So when explanatory activity—*opération identificatrice*—intervenes upon perception and the diversity it presents, a 'resistance' is encountered; that 'contradiction' so fundamental and necessary which Hegel regarded as constituting an antinomy. On the one hand, "la raison *veut* l'identité"; on the other, "elle *sait* qu'il y a diversité." ["Elle le sait, parce qu'elle sent qu'elle ne fait que *tendre* vers l'identique et qu'il a donc fallu que l'identité ne soit pas présente, qu'elle ne préexiste pas toute faite dans la conscience, mais qu'elle y soit précisément introduite par l'effort de l'intellect. Elle le sait donc du fait de son fonctionnement même" (I, p. 101).] Such, indeed, is just what M. Meyerson calls the "paradox of progress" which attends inductive no less than deductive inference.

In tracing the ways in which this paradox has been handled in the history of logical doctrine, M. Meyerson is struck by the 'unlimited confidence' with which each reformer proclaims the importance of his innovations and the slight attention accorded them by the succeeding generation, driving home his point by citations from Hamilton, Jevons, Bentham, Whewell, de Morgan and Boole, Venn, Russell and Wittgenstein. He occupies himself at length with more recent work in symbolic logic, though it is difficult to see why he should suppose it very relevant to his own inquiry. Some of his criticisms of Frege, Whitehead, Russell and Lewis seem to issue from a misapprehension of what they would be at, *viz.* from supposing them to be really concerned with explaining the genesis of our knowledge of pure mathematics (cf., I, pp. 23, 25–8, 254 *et passim*). Yet at other times his interest in the work of these logicians appears to issue from the support it seems to lend him in his view that in so far as symbolic logic approaches the ideal of strict deduction from a priori principles, so far does it show itself tautological, generating nothing, incapable therefore of accounting for the novelty inherent in every advance in knowledge. Thus, for instance, examining the interpretation and the rôle of implication in Russell's logic (as that which "renferme l'énigme que nous cherchons à élucider") M. Meyerson concludes that, strictly interpreted, it excludes any really 'new' element, and that therefore its employment rules out the possibility of any genuine advance in thought. Logistic is as powerless in this respect as the traditional syllogistic logic it seeks to replace.

In his examination of the latter, M. Meyerson's attitude seems strange and rather disappointing. He appears to uphold the old charge of circularity,

but not to consider the best answers that have been made to it. (Strangely enough, though he quotes W. E. Johnson's interpretation of Mill's treatment of the matter, he makes no reference to Johnson's *refutation* of the charge, nor to his view of what exactly the 'novelty' of new knowledge consists in.) Neither does M. Meyerson's position about 'relational propositions' seem quite clear. He is well aware of the importance assigned to them in modern logic, of their prevalence in mathematics and of their apparent irreducibility to propositions of subject-predicate type. He regards relational propositions as he does laws, *viz.* as being only provisional formulations. Our thinking, he argues, proceeds on the conviction that reality will be found conformable with its own structure, and since all its efforts are necessarily directed towards demonstrating the rationality of the real, it follows that what it necessarily seeks to discover is "l'être véritable des choses." Now, the statement expressing such a discovery assumes the form of a predication about that 'être.' Statements of relations holding between things can, therefore, "only appear as 'secondary knowledge' (*une connaissance secondaire*), inferior in rank to that which treats of the existent itself . . . and ultimately to be adjudged useful only in so far as they facilitate the acquisition of the other kind of knowledge" (I, pp. 254–5, 260). The view that relational propositions are co-ordinate in knowledge-status with subject-predicate propositions is, indeed, the view of Positivism. For Positivists, the search for knowledge is a search for the relations in which things stand, and the corollary of this view, in metaphysics, is to affirm the existence *per se* of natural laws, independently of cognition. But M. Meyerson, who is satisfied that physical laws are ideal constructions, regards the falsity of this consequence as certifiable from the history of scientific thought. To the suggestion that the special character of relational propositions was overlooked until recently only because language has been moulded, as thought had been dominated, by the influence of philosophical conceptions and Aristotelian logic, M. Meyerson replies that the fact of so long and absolute a domination, "so difficult to eradicate, even after the complete destruction of the (Aristotelian) physics had deprived it of a base," is, on the contrary, strong evidence that it expresses the intimate character and tendency of our rational activity.

Thus the conclusion of the first two books of Vol. I is, that explanatory activity as defined is adequate to withstand comparison and criticism; it remains for M. Meyerson to apply his formula to the different types of scientific thought exhibited (i) in the mathematical and (ii) in the extra-mathematical sciences. Books three and four of Vol. II are occupied with these applications.

(i) There are four difficulties M. Meyerson has to contend with in showing 'how mathematics is possible' within the provisions of his theory. It is indisputable that mathematics is applicable to the natural world, yet mathematical reasoning does not seem to consist of a transition from attributes to essence. Again, mathematical results seem strictly rational and rigorously certified, yet mathematics progresses and is not a systematic tautology. How there can be a science so characterized is difficult to answer, but no theory that is purely a priori, nor any purely a posteriori, in its account of the genesis of mathematical knowledge, can be acceptable, for the latter cannot explain its rationality, rigour and certitude, while the former, interpreting mathematics as a tautology (cf. the logisticians) renders it inapplicable and useless, and fails to account for the element of diversity in every mathematical equation. M. Meyerson maintains that what is strictly rational in this type of demonstration consists in establishing a series not of strict identities but of identifications. We certainly proceed from equality to equality, but only by setting aside each time—by consciously neglecting, declaring indifferent

or irrelevant—the diversity that resists our attempt to identify (*e.g.* there is no question of strict identity between the squares and the rectangles in the theorem of the square on the hypotenuse, nor between the sum 12 and the two numbers, 7, 5, in the equation $7 + 5 = 12$. In order to identify we must allow that shape is irrelevant to area, that the partial groupings is indifferent to the sum-total. Yet those differences, treated as irrelevant, *subsist*. "Without the operation that unites them, seven and five *would not* make twelve, but rest seven and five—there alone, as Antisthenes said, is the sole and genuine identity" (II, p. 337). And M. Meyerson finds the concept of 'equals' itself full of ambiguity, and points out that Frege (who declares he will use it strictly in the sense of 'coincident with' or 'identical with') is led to affirm that the identity of the two terms it connects can never be other than partial (II, p. 335). There is thus an operative, constructive element, constitutively present in every equivalence established. The indispensability of this act—this *opération identificatrice*—makes it more correct to say, with Bradley, that 7 and 5 *make* 12, than that they *are* 12.

(ii) In the extra-mathematical sciences, the real with which we begin and to which our eventual conclusion refers is about something universal and not concrete, in the sense that that with which we are acquainted in perception is concrete. We try to eliminate one and another property from, say, an electrified body, but always with the intention of maintaining in the end that it is with an electrified body simply and solely that we have experimented. Such an object is a concept ("très certainement un être de raison") just as is the number seven (II, p. 354). Experience cannot directly inform us about the behaviour of this "être de raison," our information comes from a judicious combination of experiences and reasonings. Strictly, the objects of experiment in the natural sciences are concepts, but to show that they are abstracted from the real is precisely to show that they are founded in it: reality is not entirely excluded from propositions formulating our initial data, nor from those formulating our results. Reasoning in physics differs in the main from that in mathematics in that the former operates with concepts which present that which is existentially independent of our minds, whereas "a mathematical concept is only an idea." In vain does the mathematician seek to assign it an ontological status, and thence try to evolve it from reality as though it were a real. But the situation is otherwise when the mathematical physicist applies mathematical concepts directly to the explanation of the natural world. The imaginary has remained a pure concept, algebraical or geometrical, whilst non-Euclidean space has assumed the character of something real and physical to the physicist, and with the relativists has finally become a 'reality' in the sense that three-dimensional space is a 'reality' for the plain man.

The selective interest of the scientist and his consequent decision to neglect certain types of diversity is further illustrated by the face of scientific knowledge at its present stage of evolution. What reason *wants* is a unified, universal knowledge; what it *finds* is a diversity of apparently irreducible sciences. A specific science is one that treats of a domain in which the irrational intervenes in an identical manner, each science being differentiated by the employment of one or more irrationals belonging exclusively to it. Again are we assured of the indispensability of irrationals for the possibility of any knowledge: "the very fact of demonstration proves that there was not identity pre-existing, but diversity, and a diversity which has been *reduced* to identity, and thus, at bottom, that identity and diversity have been affirmed *simultaneously*" (II, p. 542). It is here M. Meyerson thinks that Wittgenstein and Bradley, in different ways, each falls into a fundamental error about the

nature of thought. The former "takes into consideration only the end in view (identity), but regards the identical as pre-existent, hence his view of the quiescent, unprogressive character of all thinking. Bradley concentrates on the starting-point and diversity, rightly asserts that rational activity cannot possibly make that diversity disappear, and so denies the intervention of identity. But the truth is that there is *at once* diversity and identity, by the fact that there is *identification, i.e.* an advance which sets off from the diverse to issue in the identical" (II, p. 543). Intellect is always directed towards the single end of the rationalization of reality by identification of the diverse, and this tendency is precisely what Leibniz designated by his term *intellectus ipse*. It is the only tendency which must be supposed pre-existent in the intellect. From this single, irreducible law two consequences follow, *viz.* that all diversity may be conceived as furnished by reality in and through sensation, and that there can be no evolution of reason. If there appears to be such an evolution, it is because something other than rational activity has been erroneously taken *for* it, or confused *with* it. Reason being, *au fond*, always of one and the same character, always directed to satisfying one and the same intellectual demand, always tending to issue in one and the same end, cannot possibly change or develop. Quoting the well-known passage of Kant: "Though all our knowledge begins with experience, it does not follow that it all arises out of experience. It may well be that even our empirical knowledge is made up of what we receive through impressions and of what our own cognitive faculty supplies from itself. If our cognitive faculty makes any such addition, it may be that we are not in a position to distinguish it from the raw material until, with long practice of attention, we have become skilled in separating it"—M. Meyerson declares that this is exactly the operation he believes himself to have accomplished. "It is precisely in the Kantian sense that the tendency to identification appears to me to precede all knowledge and all experience, as being a priori *par essence*."

Thus in this last, as in all his previous works, M. Meyerson refuses to venture beyond the confines of epistemology. Whether he will continue to avoid all direct treatment of ontological questions we shall doubtless see if he accepts his invitation to deliver the Gifford Lectures for 1934–36 at the University of Glasgow.

S. V. KEELING.

PHILOSOPHY IN GERMANY

Summary: This survey is concerned with (1) *a phenomenological study in sociology by Alfred Schütz;* (2) *Ernst Bergmann's plea for social reorganization in his soziosophy of the sexes;* (3) *Z. Lubienski's examination of Hobbes' philosophy;* (4) *an article by Rudolf Carnap in the periodical "Erkenntnis." It ends with a brief notice of a history of Logic by Heinrich Scholz.*

IN *The Social World as a Significant Structure*,[1] ALFRED SCHÜTZ (of Vienna) begins by pointing to the remarkable amount of controversy raging in Germany around the nature, scope, and methods of sociology. He believes that the key to the problem lies in the analysis of significance. Accordingly he undertakes to analyse the various senses in which an experience can be

[1] *Der sinnhafte Aufbau der sozialen Welt.* Julius Springer. Wien. 1932. Pp. 285.

significant, and the various ways in which we understand the experiences of others. These investigations are followed by a detailed discussion on the most general types of social intercourse, and he concludes with an account of the nature and methods of sociology. Schütz writes from Husserl's point of view, but in a short review it is impossible to exhibit either his close dependence on phenomenology or the subtlety and variety of his distinctions. The work of Max Weber is his sociological starting-point.

Schütz agrees with the sharp distinction drawn by Bergson and Husserl between experiences as lived through and as objects of reflection. It is only when we reflect on an experience that we distinguish it from the rest, and thereby give it significance. An experience is never significant on its own account, but always because of the subject's attention to it. Schütz then discusses the specific kind of significance which the "agent (*Handelnde*) attaches to his act," and this leads to his account of a *Sinnzusammenhang*. This relation holds whenever a number of separate events form a "synthesis of a higher order" and we can apprehend then as a unity. Thus, for example, an act (*Handlung*) is a *Sinnzusammenhang*. It always consists of several events and is always preceded by a plan in the agent's mind. Its unity is dependent on his attention to this plan. A *Sinnzusammenhang* may be subjective or objective. It is subjective, as in the example given, when it includes mental events, and when the observer is apprehending them as they occur here and now in some consciousness (his own or another's). Schütz concludes that though we can understand other people, we cannot understand them in the same sense as ourselves.

The most important distinction which Schütz draws between social attitudes is the distinction between *Umwelt* and *Mitwelt* relationships, for example, between my conversation with a friend in the same room and my thoughts of the postman who delivers my letters. In an *Umwelt* relationship my partner is always a 'You' (*Du*), someone whom I apprehend in his particularity. But my partner in a *Mitwelt* relationship is always an "ideal type." I apprehend him as a so-and-so, as someone of a certain kind. He is always known by generalization, and the presence of intercourse with him can only be hypothetical. Thus I can only organize the acts of my *Umwelt* partner in a subjective *Sinnzusammenhang*.

The sociologist, Schütz concludes, resembles the observer of a *Mitwelt* relationship. Like such an observer he supplies ideal types to explain observed facts. But he must explain what the observer takes for granted and must fit his explanation into the scheme supplied by science. This scheme is always an objective *Sinnzusammenhang*. Yet sociology is concerned with subjective *Sinnzusammenhänge*. Schütz believes that these two facts account for most of the difficulties in understanding the nature of sociology. And he also believes that the theory of ideal types overcomes them. For the knowledge acquired through such types is precisely of the desired kind—it is knowledge of experiences which in fact belong to a subjective *Sinnzusammenhang*, but are abstracted from it.

In his soziosophy of the sexes,[1] Ernst Bergmann (professor at Leipzig) advocates the reorganization of society in conformity with biological facts. He believes that the sexual life of animals, including human beings, reveals certain tendencies, which human beings have thwarted with disastrous results. Scientific research and artistic creation have developed out of two sexual impulses in the male, the impulse to search for a mate and the impulse

[1] *Erkenntnisgeist und Muttergeist. Eine Soziosophie der Geschlecter.* Ferdinand Hirt. Breslau. 1932. Pp. 448. RM. 7.50.

of self-display. Man is a thinker and creator, an *Erkenntnisgeist.* But he is also an egoist, indifferent to social welfare. He desires to wander rather than to found a home, and as he lacks natural protection, is in perpetual fear for his life. The history of thought testifies to his pessimism and his perpetual oscillation between passion and disillusionment. But woman, on the other hand, is a maternal and social being, a *Muttergeist,* whose interests are centred in the care of the young and improvement of the race. She enjoys natural protection, and is far more tranquil than man. Thus, though deficient in scientific and artistic ability, she is richly endowed for social organization, and was in fact the founder of states. But man, who is unfitted for social organization, has usurped her functions, and the world is suffering from his autocracy. It can only be saved if women regain their natural predominance in social, political, and economic life. But the feminist movement is quite on the wrong track, because it aims at making women like men, instead of developing their natural capacities.

In his book on Hobbes' ethico-political system,[1] Z. Lubienski carefully examines Hobbes' writings and refers extensively to interpretations which differ from his own. He gives special attention to Hobbes' theory of duty and its relation to his psychological beliefs. He maintains that in Hobbes' view duty is definable in terms of mental obstacles, obstacles that are thought of and not perceived. There is a duty not to perform any action that obstructs the way to one's welfare, and if the various obstructions leave only one course open, it is one's duty to follow it. But a duty is not simply something which is thought of as a means to an end. Just as a man turns aside from a wall that is blocking his path, so he turns aside from any course of action when he clearly sees that it stands in the way of his welfare. The idea affects his will with the same force as a percept. On the other hand, he desires, maybe unconsciously, any course of action that leads to his welfare, and desires it consciously when he clearly perceives where it leads. After considering different interpretations, Lubienski maintains that these differences have far-reaching effects. For the state, in Hobbes' view, is based on a contract which involves mutual duties, and thus his theory of the state is based on his theory of duty. Lubienski believes that his own interpretation exonerates Hobbes from most of the charges of inconsistency brought against him. He maintains that Hobbes' errors are mainly due to his egoistic foundation of ethics, to his theory of unconscious desires, and to various suppositions required by his code of duties. Hobbes' main service to philosophy lies, he believes, in his attempt to base ethics on empirical data and apply scientific methods to its problems. The book ends with a discussion on editions of the *Leviathan,* followed by a bibliography.

Rudolf Carnap's article on *The Language of Physics as the Universal Language of Science*[2] reaches the comprehensive conclusion that all the sciences are parts of one science, namely of physics. Expressed more accurately, this means that every scientific proposition can be expressed in the language of physics. In this article the discussion is mainly restricted to the empirical sciences, for as Carnap points out, his views on philosophy, logic, and mathematics have often been expressed elsewhere.

The argument opens with a short discussion on language. A language only consists of words and of syntax, meaning by the latter the rules for con-

[1] *Die Grundlagen des ethisch-politischen Systems von Hobbes.* Ernst Reinhardt. München, 1932. Pp. 303. RM. 12.

[2] *Die physikalische Sprache als Universalsprache der Wissenschaft. Erkenntnis.* Band 2. Heft 54.6. Pp. 433–465 (Felix Meiner, Leipzig).

structing propositions and for translating one proposition into another. But it is customary to refer also to the meaning of words and propositions, to objects and facts. But philosophy is not concerned with this reference, and it easily leads to illusory questions. Carnap then considers the "protocol language." Scientific evidence is derived from protocol propositions that describe our perceptions, feelings, thoughts, etc.—as, for example, "red here now." The language of physics, on the other hand, is purely quantitative, and is both "intersensual" and "intersubjective."

Carnap then argues that every scientific proposition can be translated into physical speech. There is no science which contains untranslatable propositions. Biology raises the problem of vitalism. This only poses one important question: can events in an organism be exhaustively explained by the laws of inorganic matter? We cannot answer this question, Carnap believes, until more knowledge has been obtained. The vitalist, however, is wrong when he claims that biological concepts cannot be reduced to physical ones. (Words, such as "entelechy," only stand for illusory concepts.) Carnap then passes to psychology, promising to give a more detailed account in another article. He maintains that every psychological proposition expresses a physical event in the subject's body—and thus sociology in its turn is easy to deal with.

Finally, Carnap develops the thesis that protocol speech is a part of physical speech. This will raise many objections, he remarks. It will be said,for example, that though rain is a physical event, my memory of rain is not, and still less the pleasure I am now feeling. And it will be said that the proposition "I am now seeing red" does not mean the same as any set of propositions that describes the state of my body. These objections, Carnap points out, are based on reference to the meaning of propositions, and are due, he believes, to the confusion which such reference produces. The hypothesis that protocol and physical propositions express distinct matters of fact leads, in his view, to insurmountable difficulties and inconsistencies. If we adopt it, we must conclude (1) that communication in protocol language is impossible—in fact, that we cannot know anything about the experiences of others. To reach this conclusion Carnap assumes (1) that we cannot on this hypothesis verify any protocol proposition made by another; (ii) that any proposition we cannot verify is meaningless; (2) We must also conclude, he believes, that physical propositions have no empirical reference. And to reach this conclusion he assumes (i) that physical propositions can only have an empirical reference if protocol and physical propositions are deducible from each other; (ii) that if propositions are deducible from each other they must be identical. He concludes that protocol and physical propositions do not express distinct matters of fact, and that the two languages only differ in the sound of their words. Thus protocol speech is a part of physical speech, and the latter is the only universal language we know. It is, accordingly, the language of every science, and Carnap welcomes the term *Physikalismus* to describe his position.

In his *History of Logic*,[1] HEINRICH SCHOLZ traces the development both of classical and modern logic. He evaluates the work of the past in the light of modern logistic and criticizes a great deal of the traditional logic.

HELEN KNIGHT.

[1] *Geschichte der Logik*. Junker und Dünnhaupt. Berlin. 1931. Pp. 78.

NEW BOOKS

Aeternitas: a Spinozistic Study. By H. F. Hallett. (Oxford: Clarendon Press. 1930. Pp. 344. Price 16s. net.)

This splendid and sustained adventure in constructive metaphysics has now been before us for two years, and despite some generous recognition it has hardly yet received its due meed of praise. It is difficult to do full justice to its subtlety and profundity, but it is a privilege to be able to make the attempt.

Professor Hallett essays the difficult task of combining a reinterpretation of Spinoza with an important contribution to contemporary metaphysics. He accomplishes it with complete success, partly owing to the admirable dexterity of his presentation, but mainly because his two aims converge. He holds that an adequate interpretation of Spinoza will show us a way of escape from our own perplexities, and that a constructive essay in Spinozism will contribute more than a mere critical estimate to the vital understanding of Spinoza. As he truly remarks, "a Spinozistic study cannot fail also to be in some measure a study of Spinoza, while many a study of Spinoza has failed simply because it has not been a Spinozistic study."

The main theme of the book is the status of the finite individual in relation to duration and to the eternal, and it is clear from the preface and the conclusion that the author's central concern is with the problem of human personality. In opposition to popular doctrines of immortality, which construe the eternity of the individual in terms of time, and also to the view maintained, for example, by Bosanquet, that finite individuals are "merged in the ideal continuum of the infinite intellect," he upholds the position which he finds in Spinoza, that individuality is a microcosm within God's macrocosm; that its defects are due to its immersion in the temporal order, and its excellences to its unchanging status in eternity; and that the principle of time is disintegration, and the principle of eternity completeness, so that the degree of completeness in the creature reflects the degree of its eternity. Individuality, in fact, derives from the fundamental nature of things, and, ascending from the ideal limit of the pulverized atom, proceeds through progressively adequate "constellations" to the utter completeness of *Deus sive natura.*

To maintain this position it is necessary to show (1) that duration is self-contradictory, and therefore unable to appear without transmutation in the Real, and (2) that the subordinate forms of individuality, though enduring, none the less display in their temporal course the quality of eternity, and are so preserved from the final absorption. This latter thesis evidently requires that the traditional conception of Spinoza as an indiscriminate merging pantheist should be reconsidered.

(1) Professor Hallett rightly contends that philosophers who leave the problem of time till the end fall into fundamental ambiguities from which it is subsequently too late to escape, and his Part I is entitled "The Ascent from Time to Eternity." He dismisses spatialized time as a mere *ens rationis,* and concrete duration as an indefinite compelled by its very nature to pose as an ultimate. Nor will he save the face of time by allowing it to be complete within the infinite. He asserts, with Spinoza, that there is no exact correlation between the *communis naturae ordo* and the *ordo intellectus:* "the real order is

the logical or intellectual order, which is not a mere corrected temporal order, but proceeds on a different plan."

Eternity, however, is not a mere abstract form or "logical proprium." It is inseparable from, in fact it is, the perpetual actuality of God. But God, for Spinoza and Professor Hallett, is not other than the order of nature. It is the same nature, therefore, which reveals itself as temporal and as eternal. The simplest way of avoiding the threatened contradiction is to say that as a single individual it is eternal, and as differentiated into finite individuals temporal; and this is the solution often attributed to Spinoza.

(2) Professor Hallett, however, argues with compelling conviction that Spinoza never for one moment intended the finite modes of substance to be regarded as wholly illusory. In the first place, if he did, the conception of *natura naturata* is confused and ambiguous. *Natura naturata* is nature constituted into modes by its own infinite activity: it is "a reality in which unity and diversity are reconciled." On the usual interpretation, it must therefore be tinged with illusion, and this Spinoza expressly denies. The mode, as it is in *natura naturata*, though not as it is when imaginatively distorted, is integral to God's nature, and therefore eternal. (This involves the unorthodox view, which Professor Hallett consistently and rightly adopts, that *natura naturans*, nature as creative essence, cannot be adequately conceived apart from *natura naturata*). In the second place, Book V of the Ethics is almost wholly concerned with the doctrine of human eternity, and it is only by a *tour de force* that this can be understood as the emptying of finite content into the divine plenitude. (Professor Hallett's treatment of Book V as a climax rather than as an excrescence is greatly to be welcomed, and his hint that the earlier books are dominated by *ratio* rather than by *scientia intuitiva* well worth following up.) In fact, nature is dismembered not by variety, but by temporal succession, which prevents variety from achieving its intended synthesis.

But are we then to admit a dualism in which duration is the devil? To this Professor Hallett replies that "eternity is the reality of duration," or "a constellation of durations." The enduring individual endures not because but in spite of defect. His persistence involves the partiality of successiveness, but also, and in proportion to the fullness of its *conatus*, a triumph over division, a movement towards unity, and the presence of a quality which turns duration to its own purposes. And as the atom is only an ideal limit, there is nothing of which it cannot be said that it exists *sub quadam specie aeternitatis*. No counter-principle is required to explain the self-unfolding of the eternal.

One feature of special interest in Professor Hallett's appeal to Spinoza in the face of modern problems is that it involves the revival of the doctrine of infinite extension. It is not merely the thought but the body of the finite individual which reflects the eternal. It is in this that Professor Hallett differs most widely from the Absolutist of the Hegelian school, and he holds that if we avoid the initial separation of the attributes we shall be rid of the whole Realist-Idealist controversy.

It is impossible to indicate in this bald outline the full scope and importance of Professor Hallett's achievement. There are, it is true, as in all books which are worth writing, certain difficulties and obscurities. It might, for example, be pertinent to inquire, if the reality of duration is eternity, whence its unreality? And if this also be from eternity, why the imperfection? But the masterly control of a complicated argument through a challenging multiplicity of detail betrays the hand of a master in philosophy, whose metaphysical passion burns with a significant lustre amid the damp smoke of contemporary empiricism. His work is in the fine old tradition of systematic

metaphysics, though it has learnt much from recent Realism. It is the most satisfying challenge for some time past to the piecemeal conception of philosophy which is now so fashionable, and to the spirit of indolent humility which underlies it. Is it too much to hope that it will serve as a stimulus and a rallying-point for a new effort towards metaphysical completeness, which shall have learnt from recent criticism to avoid the false stresses of the old?

A. Boyce Gibson.

Freedom in the Modern World. Broadcast Talks on Modern Problems. By John Macmurray. With a Preface by C. A. Siepmann. (London: Faber & Faber. Pp. 215. Price 6s.)

This book consists of two series of talks, twelve on "Reality and Freedom," delivered in 1930, with the pamphlet that was published in advance by the B.B.C. as an introduction to them, and four which were given in 1932 as a contribution to the series then being delivered on "The Modern Dilemma." Here the order is reversed—wisely, I think, as the latter series contains the wider treatment and strikes the keynote of the other. The writer has also been wise in printing them in the crisp, clear, gripping sentences in which they were delivered—a model for B.B.C. talks on any subject, somewhat of a miracle upon a philosophical one. We are not surprised to hear from Mr. Siepmann of the "miniature Renaissance among thousands of English listeners" that they created.

In a notice like the present it is only possible to give a specimen or two of the style in connection with the different subjects of the above divisions. If I add a few words of criticism of the doctrine developed in the longer course, it is only as a small contribution to the discussion which it was the writer's object to stimulate.

In the first of the four talks the "dilemma" with which we are faced is traced to the inward division between what we still believe, or think we believe, and what we feel—the "split between head and heart"; or, again, between our public organizations, which are only a "spearhead," and the force behind them, without which they will never go home. The second talk, on "Science *versus* Religion," corrects this generalization by showing that our science, which represents the head, is itself a value which we feel. What is really wrong is that "our feeling for science and our feeling for religion are at loggerheads." It is this that is "destroying us and our civilization." And the reason is that neither feeling is a genuine one—the first being founded on no real desire for truth but only on "cupboard love," the second on no real belief in Christianity as a quickening spirit of life. Yet, as the third talk tells us, science is in better case, for it has won its freedom, whereas religion, defined broadly as our "convictions about what is good and what is not good" or as "what is worth while in life," is still in bondage. The dilemma therefore takes another form still, as the choice between "setting our emotions free or destroying the freedom of thought." In the fourth talk, on "A Faith for the Modern World," a couple of pages, the best perhaps in the book, give us the contrast between "the religion of fear"—the religion that would save us from the things we fear in suffering, loss, unhappiness, death—and "the religion of love," which will save us, not from these things, but from our fear of them. Without a whole-hearted transformation of the former into the latter "our religion is as much divided at heart as we are, and has lost its roots."

The pamphlet introductory to the talks on Reality and Freedom—which

proved, we are told, a best seller—gives the historical background of our dilemma, now treated as a "revolt of emotion" from the dead hand of Roman civilization, first in the Renaissance and Reformation, next (when these had turned into a new tyranny) in the Romantic Movement, lastly (when this had degenerated into nineteenth-century sentimentalism and precipitated us into the Great War) in what the writer hopes will be the final one, and will issue in a new and a true emotional freedom. But such a freedom must be founded on reality, and it is in the definition of this freedom-giving reality that a living, as contrasted with a merely academic, philosophy must to-day find its main task. The rest of the book, in which the simplicity of the language is apt to conceal the amount of thought it must have cost the writer, is his contribution to such a philosophy.

Needless perhaps to say, the "reality" meant is not mere existence. A thing may exist but be unreal in the sense of being a sham—something insignificant and worthless in respect to what it claims to be. The writer does not quote the common and illuminating phrase "the real thing," but that is what he means. Asking what it is that causes us to take things for what they are not and to miss "the real thing," he finds it to be some unreality in ourselves. It is in us that "the unreal thing takes root and grows," and this brings him to a statement of what is meant by being real in our thinking and feeling, in contrast to the "unreal people" so many of us are. By a similar expansion of the meaning of freedom, it is shown to mean not only absence of restraint but doing what we want to do. "A man is free only when he does exactly what he wants to do without let or hindrance." To the "timid moralist" who might demur the answer is contained in what has already been said about reality. So long as what a man wants is significant and worth his while (not merely what he thinks he wants), there is nothing to fear but everything to hope from an absolute freedom, seeing that his one great want is to express his own nature. If we ask wherein that nature consists, we come to the central point: "Our nature is to apprehend and enjoy a world that is outside ourselves, to live in communion with a world which is independent of us." More particularly it is to live in communion with one another, not merely in friendliness but in friendship. "Human nature expresses itself most concretely and completely in friendship" (p. 179). The last four talks draw out the contrast of this "personal morality" with "mechanical" and "social morality," consisting respectively in obedience to moral law and in so-called "social service." Of these latter the first is set aside as unreal because (again in spite of what "timid moralists" believe) "there is in reality no such thing as a moral law and obedience has no place in morality"; the second because it is founded on biological ideas of the social organism, to which the individual has to sacrifice himself. As contrasted with both we have "the true moral ideal" defined as "self-realization"—always subject to the same condition: that the self is a real one. "This is freedom and (again) the secret of it lies in our capacity for friendship."

If one turns from these warm, even glowing pages to what may seem cold-blooded criticism, it is only in the name of the freedom and friendship to which the writer appeals. Sympathize as we must with him in the difficulty of the task he undertook in these talks, we have also to remind ourselves of the danger of over-simplification to which it tempts. While there can be no question of the brilliance which with he has overcome the difficulty, one may doubt whether he has altogether escaped the danger. On two vital points we are bound to ask at least for further light. The first concerns the contrast he draws between the different kinds of morality, the second his

resolution of what he calls "personal morality" into the one virtue of friendship. With reference to the first, he is of course right in appealing to the inwardness of all true goodness as against that which is merely made-to-rule—to the Gospel as against the Law. But to protest against the attempt to mechanize life as obedience to a set of rules is one thing, to propose to abolish the idea of moral law is quite another. The Gospel came not to destroy but to fulfil the Law, and the great achievement of Christianity was not to scrap but to deepen and humanize the Stoic conception of the inexorable demands which the moral order in the world, interpreted as the Will of God, lays upon the will of man. Similarly with regard to institutional morality. Professor Macmurray is surely right in reminding us that an institution may gain the whole world and lose its own soul. But, again, to protest against the mechanization of institutions is one thing, to ignore the direction and extension they give to the power of the individual in the complicated circumstances of the modern world is another. The error is not in insisting on what T. H. Green called "the life of the good neighbour and the honest citizen" as "the highway of reason," but in forgetting (as Green also put it) that "the enthusiasm for humanity is only a further stage of the same journey." It would surely be a pity if this whole line of thought, impressing upon us the essential rationality of the great fundamental human institutions, should come to be identified with a "biological" view of life, with which in reality it has nothing to do. Coming to the second point, it is true that if we take friendship in a wide and deep enough Walt Whitmanian sense, we might accept it as inclusive of everything. Professor Macmurray, in the passage already quoted, himself suggests such a sense when he speaks of the openness of mind and heart to the greatness and beauty of the world that is outside ourselves and the power of living in communion with it as constituting our true reality. But he has no sooner suggested it than he seems to drop it again and to revert to the narrower meaning of the word, which of itself is unable to bear the strain put upon it. However important friendship may be as one of the supreme goods of life and the condition of many others, it only itself acquires significance and "reality" when chastened and enlightened by the trained insight into the comparative value these goods possess, to which, if to any one thing, we must look for the principle of freedom. Perhaps in his next series of talks, which we hope will not be long in coming, Professor Macmurray will have something more to say on all this. I am persuaded that in his hands it need not be more "academic" than what he has already given us, except in the sense of being perhaps more fully in the spirit of the first great Academy, in which both he and I went to school.

J. H. Muirhead.

A History of Indian Philosophy. By Surendranath Dasgupta, M.A., Ph.D. Volume II. (London: Cambridge University Press, 1932. Pp. xi + 620. Price 35s.)

The second volume of Dr. Dasgupta's great work is a surprise in more than one respect. In Vol. I the chapter on the *Śaṅkara School of Vedānta* is a complete whole; but now we see it "continued" in Vol. II by 225 pages, giving an outline of the whole history of the School up to Madhusūdana Sarasvatī (A.D. 1500). The philosophers here marshalled before our mind are partly the same whose leading ideas we know already from Vol. I, but here, after a general survey with special regard to the connection with Buddhism, a separate paragraph is given to each of them and many others in

chronological succession. For the first time we have here a connected history of the so-called monistic (Advaitic) school of Vedānta. This history consists in the main in a series of fanciful and desperate attempts to solve the naturally insoluble problem of the relation of the Absolute (Brahman) and the world-appearance (Māyā). And these attempts may be said to run on two lines: a realistic and an idealistic one. The former endeavoured to understand Māyā as some sort of substanceless, undefinable ("neither real nor unreal") stuff connected as a mere "instrument" or otherwise with Brahman or a "part" of Brahman; the latter actually denied the positive existence of anything by the side of Brahman and declared the existence of objects to be nothing more than (erroneous) perception. The former is the attitude of Śaṅkara himself in his great commentary on the Brahmasūtras, where he combated Buddhist idealism, and of most of his followers until the sixteenth century; the latter appeared first, under Buddhist influence, in the Gauḍapāda-Kārikās believed to be the work of Śaṅkara's *praguru* (teacher's teacher), was upheld by Śaṅkara's great contemporary Maṇḍana, and obtained in the sixteenth century its classical formulation in Prakāśānanda's Siddhāntamuktāvalī. It is interesting to note that Śaṅkara seems to have gone through a change of opinion similar to that of Kant's, for in his commentary on the said Kārikās we find him still firmly rooted in idealism. Maṇḍana is hypothetically identified by our author with Śaṅkara's eminent pupil Sureśvara, the latter being M.'s new name after his conversion to Ś.'s views. Maṇḍana's Brahma-siddhi (to be published soon in Madras), which on this hypothesis would be prior to his connection with Śaṅkara, is one of the most remarkable Indian contributions to philosophy. In it M. introduces, among other things, the problem of the subject ("seeer") and the object ("the seen"), and says that (as our author puts it, p. 88) "it is only by abolishing the apparent duality of subject and object that the fact of experience can be explained. For, if there was any real duality of subject and object, that duality could not be bridged over, and no relation between the two could be established; if, on the other hand, there is only the subject, then all things that are perceived can best be explained as illusory creations imposed on self, the only reality." M. admits the inconsistency of his view that Nescience or Imagination (of plurality) does not belong to Brahman but comes exclusively from the individual souls, though these are themselves the product of Nescience (in spite of their being essentially identical with Brahman); and he explains this inconsistency by Nescience (Māyā) itself being an inconsistent, yet necessary, category. His statement that the agreement of individual experiences is due to similarity of illusions in different persons reminds us of Leibniz's pre-established harmony; and the detailed criticism by Śaṅkhapāṇi, M.'s commentator, of the negative definition of happiness, and his conclusion that pleasure is not a relative but a positive concept, is another valuable parallel to our own debates on the subject. (The present book, by the way, purposely avoids the drawing of any parallels between Indian and Western thought.) By Maṇḍana also were started the dialectical forms of argument employed in Vedānta, though it was only some centuries later that the (much older) Buddhist negativism (establishing "voidness" by proving all definitions to be untenable) intoxicated Brahmanical speculation: it appeared in the eleventh century with the "Great Science" (*mahā-vidyā*) of the Nyāya philosopher Kulārka Paṇḍita, and culminated, on the side of the Vedānta, in the dialectic of Śrīharṣa's "Sweets of Refutation" (A.D. 1150). This development of logical formalism is described on some eighty pages of our book and contains many interesting items, such as Śrīharṣa's fight with the Buddhists for a definition of "right cognition."

The second great surprise of our book is its next chapter (XII, of 45 pages), devoted entirely to the *Yoga-vāsiṣṭha*. This huge work of 23,734 verses, containing popular philosophical lectures embedded in stories, has never before been utilized for a history of philosophy, but the justification for doing so is the obvious fact of its being the expression of an otherwise unknown school of the idealistic Vedānta. It can moreover be shown to have influenced several philosophers of the Śaṅkara school (of whom Prakāśānanda even refers to it as one of his main authorities), and thus may well claim a chapter for itself after the one on the latter. As it nowhere refers to Śaṅkara, and a summary of it was written in the ninth century, the seventh or eighth century may be regarded as its probable date. And as the views expressed in it strikingly resemble those of the idealistic school of Buddhism (*vijñāna-vāda*), "the whole work seems to be a Brahmanic modification of idealistic Buddhism." This is evident, *e.g.* in the description of the Absolute (called Brahman, etc.) as *nirvāṇa-mātra*, "pure cessation," and of the condition of the liberated as "stone-like" unconsciousness, unthinkable and indescribable; and further in the theory that all the dreams of world-appearance proceed from and are nothing else but the imaginary entity called Mind (*manas*), Nescience, Darkness, Taint, etc. Activity and thought are one according to this view. Through the strong imagination and desire, "I shall see," etc., the sense-organs appear out of the mind. Dream states and waking states are different only in that the latter are relatively persistent. Special emphasis is laid on free-will (*pauruṣa*, "manliness"), the great possibilities of which are defended almost passionately against the current fatalistic theories. But the reducing of *karman* to thought-activity and consequent denial of fate (*daiva*, the action of God or the gods) is perhaps not, as Dg. would have it, tantamount to a complete denial of *karman* in the traditional sense. For *karman* is not usually identified with *daiva*, and the constant struggle between the old and the new *karman*, as between two rams, of which our text speaks (II, 5, 5) evidently implies that each of us starts life with a karmic burden which to some extent necessitates both his experiences and actions, at least in childhood. (An English translation of the Yoga-vāsiṣṭha, now long out of print, was published in Calcutta in 1899 by Vihári Lála Mitra.)

The third chapter of the volume (Chap. XIII, 164 pages) is a new surprise. For in the short section of Vol. I dealing with Caraka's account of the Sāṃkhya philosophy of his time there is no hint that the "*Speculations in the Medical Schools*" would be treated *in extenso* (apart from what had been said already) in Vol. II. And here, indeed, we cannot help objecting that about the first half of this chapter with its minute account of anatomy, physiology, and medical practice, though undoubtedly very interesting, is out of place in a history of philosophy, or at any rate in this volume (which is not engaged in Tantrism). A short account of foetus and Subtle Body, head and heart, etc., and the discussion of passages mentioning metaphysical categories, would have sufficed. We notice that our author finds the earliest direct reference to the *guṇa* theory in Atharva-veda X, 8, 43; that the migrating Subtle Body (always accompanying the *ātman*, "self" or soul) is called *bhūtātman*, "elemental self," or *ātivāhika-śarīra*, "transfer-body"; that the latter consists of the four elements and mind (*manas, sattva*); that *prajñāparādha*, the misuse of intelligence, is the root-cause of all diseases; that the nerve system of the Tantras is entirely different from that of the medical systems; that Caraka counts nine substances," viz.: the five elements (four plus *ākāśa*, "ether"), mind, soul, time, and space; that mind is atomic and "supersensual"; that there is a highest transcendent self (*para ātman*) which is "unchangeable"; that every self is eternal and the rise of consciousness in it but occasional,

i.e. occasioned through mind and senses. The art of disputation, and with it the knowledge of logic, was considered to be of such vital necessity for the physician for earning his living in competition with his colleagues that Dg. finds it not improbable that the Nyāya or so-called logical school of philosophy derived most of its doctrines from Caraka, whose date undoubtedly precedes that of the Nyāya-sūtra. In the very interesting sections on ethics we enjoy the healthy common sense of Caraka, and learn among other things that he admits "fate" only for extreme cases; declines the theory that the foetus derives the soul from its parents, and demonstrates—which no other Indian system of thought has deemed necessary—with all possible proofs the truth of reincarnation. As a curiosity may finally be mentioned that a man of "good conduct" should, according to Caraka, "be well-dressed . . . comb his hair, scent himself, and—smoke." (For a complete English translation of the Caraka-Samhita, Calcutta, 1890–1911, and its vicissitudes see Winternitz, *Geschichte der indischen Litteratur*, Vol. III, p. 545, n. 2.)

The last chapter of the book (Chap. XIV, 116 pages) has for its subject *the philosophy of the Bhagavad-Gītā*. Considering that Dr. Dasgupta ventures to suggest, "however unfashionable such a view may appear," that the Gītā is pre-Buddhistic (p. 551; cp. 521 and 552),[1] we are a little astonished that he has reserved its treatment for his second volume, and even the end of it. The history of Indian philosophy can, of course, not without great disadvantage be pressed into a strictly chronological scheme, but still chronology should not be so provokingly neglected as has been done in this volume, where from the fifteenth century A.D. (Madhusūdana) we are taken back to the seventh or eighth (Yoga-vāsiṣtha), then to the second or so (Caraka), and lastly, with a jump of a millennium, to the Bhagavad-gītā! The Yoga-vāsiṣṭha may be in the right place as a sort of appendix to the chapter on the Śaṅkara school, but both Caraka and the Gītā should in a future edition be transferred to Vol. I (where the Gītā could follow Chapter III, and Caraka Chapter VI), and Mīmāṃsā and Śaṅkara from Vol. I to Vol. II, which would have the further advantage of the Śaṅkara school being dealt with in one and the same volume. As to the treatment of the Gītā, we are surprised to find that our author, after having assured us that "the view taken in the present exposition of the Gītā philosophy is diametrically opposite to that of Śaṅkara" (p. 438), seeks every now and then support for his view just from Śaṅkara and Śrīdhara only, and never from the Vaiṣṇavite commentators. The latter, no doubt, are later than Śaṅkara, but still on the whole certainly more in agreement with the author's standpoint. We further miss (as already in the chapter on the Śaṅkara school) a few words at least on the character and authenticity of the Gītā commentary attributed (wrongly, in our opinion) to Śaṅkara. But these and a few minor objections are more than balanced by the pleasure we have in stating that this chapter is the first independent exposition of the Gītā by an Indian scholar, *i.e.* the first attempt made in India to approach the Gītā with deliberate disregard of its commentaries (of which even the oldest one available is separated from it by many centuries, and consequently suspect of misrepresentation). It curiously coincides with an attempt, by another Indian scholar, of the very same kind on a part of the same subject, viz., the thesis for the Ph.D. (of Kiel University, Germany), entitled *Akṣara, a Forgotten Chapter in the History of Indian Philosophy* (Baroda, 1932), by

[1] Which view requires a proof of the kind nowhere found in Das Gupta's work (and purposely excluded from it, like all controversy; see Preface, p. vi), viz., one on strictly philological lines. This will presumably be undertaken by Dr. Belvalkar in the long-expected third volume of his *History of Indian Philosophy*, and might become a success so far as the older part of the Gītā (Chapters I–XII and part of XVIII, in our opinion), is concerned. Das Gupta seems to look at the Gītā as the work of one author, or at least of one age.

Professor P. M. Modi, of Bhavnagar (Kathiavar). It would be very interesting to compare the results of the two inquiries, but here it must suffice to hint at them in connection with the highly problematical theory of the two "Natures" (*prakṛtis*) of God by which the Gītā seeks to explain the existence of the world. Dg. holds that according to the Gītā there are three such Natures, viz.: (1) the "Lower Nature," *i.e.* the eightfold cosmic matter (five elements and the psychic factors called *buddhi*, *ahaṃkāra*, and *manas*); (2) the "Higher Nature," *i.e.* the collective whole of life and spirit; and (3) Māyā, or the power of God from which the three Guṇas (or dynamic tendencies, qualities of character) pervading the psychosis-complex (of Nature 1) have emanated. Now the Gītā, while indeed using and explaining the terms Lower Nature and Higher Nature, never speaks of Māyā as a third Nature of God. Dg., however, opines that the Guṇas, though often called products of Nature, are nowhere said to produce (as in classical Sāṃkhya) the elements, senses, etc., and that therefore the Nature from which they come must be a third Nature. Here Dg. is wrong in our opinion. For in Bh. G. XIV, 20 it is clearly stated that the bodies come from the Guṇas; in XV, 2 we read that the branches of the world-tree, through the nourishment they receive from the Guṇas, put forth as their buds the objects of the senses; in XIII, 21 the Guṇas, *i.e.* undoubtedly, in the form of their products, the objects, are said to be "enjoyed" by the self; and III, 28 speaks of the double share of the Guṇas, viz., as both the senses and their objects, in the works.[1] All this shows that the Guṇas, and so Māyā, are indeed at the bottom of the Lower Nature. What, then, is the Higher Nature? It is "life," indeed, but not "spirit." Dg. has not been aware of the importance and the long history (disclosed by Dr. Modi) of the term *akṣara* used (already before the Gītā as well as after it) to distinguish the Higher Nature from the Lower Nature, which latter is *kṣara* = "flowing, mutable, perishable," *i.e.* *pariṇāmin*, "evolving" (as is the later classical term) through the eight forms mentioned above. He could not otherwise have spoken of "*parā prakṛti* or *puruṣa*" (p. 465); for *puruṣa*, "spirit" (the usual sense of the word), is exactly what *prakṛti*, "nature," is not, as shown, *e.g.*, by Bhag. Gītā XV, 16–17 (applying exceptionally *puruṣa* in the sense of "principle"), where the "highest principle" (*uttama puruṣa*) is stated to be above both the "mutable" and the "immutable" one (= Lower and Higher Nature). Higher Nature is life (*jīva*) imagined as the subconscious energy (*prāṇa*) seen at work, *e.g.*, in the building up and preservation of organisms (like the principle called *mahat* in the Pāñcarātra; see Schrader, *Introduction to the Pāñcarātra*, p. 73). This has been felt also by Dg. in his remark (p. 463): "the undifferentiated (*avyakta*, meaning *prakṛti*, existing, probably, as the subconscious mind) power of holding the senses," etc., but in the passage here referred to (XIII, 5) *avyakta* means undoubtedly not an individual psychic power, but the same primordial Nature which, according to VIII, 18–19 is the material basis of the categories enumerated in the verse.[2] Dg. rightly states that "in the Upaniṣads . . . it is very unusual to characterize the self as *avyakta*" (p. 471),[3] but he is again wrong in believing that the Gītā does so in the above sense in two passages; for in II, 25 the word is no technical term, but simply means "invisible," or the like, and in

[1] This interpretation of the difficult passage is my own; the commentaries have nothing satisfactory. It is in perfect agreement with the second half of the verse where the famous phrase *guṇā guṇesu vartante* can mean nothing else but "The Guṇas as instruments (sense-organs) are engaged in the Guṇas as (sense-)objects" (Śaṅkara).

[2] For these are, of course, included in the "manifest existences" (*vyaktayaḥ*), which is an argument, among others, against D. G.'s holding that those categories are, according to the Gīta, apparently not derived from a higher principle.

[3] This is nowhere done in the older Upaniṣads nor in any of the later ones so far as these can be shown to have been known to the author of the Gītā.

VIII, 21 not the self but celestial matter[1] as the seat of the liberated and the "Highest Abode" of God, the supreme spirit (v. 22), is spoken of. There are several other points where we find it difficult to agree with Dg. But we are far from denying that his chapter marks a progress in Gītā research. We see a progress, *e.g.*, in his very instructive section on Yoga, where he conclusively proves that the treatment of Yoga in the Gītā is entirely different from that in the Upaniṣads and by Patañjali, and suggests that the theistic element (self-surrender in God) of Patañjali's system, which has always been felt as a stranger in it, comes from the Gītā. And perhaps the most interesting one of the new problems raised by our author is the question whether the Gītā, which knows nothing of the *tanmātras* (subtle elements) of Classical Sāṃkhya (p. 477), does not also differ from the latter's idea of the soul (of the nature of pure intelligence) by its enumerating *cetanā*, "which probably means consciousness," along with the elements, mind, etc., and with desire, hate, pleasure, pain, etc., among the categories which are not self (pp. 471, 477).

This volume, like the preceding one, is a monument of scholarship of which India may well be proud. Its size could have been cut down without disadvantage by avoiding repetition[2] and digressions,[3] and the Index is not exactly what it should be.[4] But still we are satisfied that Dr. Dasgupta has not kept us waiting for another year or two, and offer him our sincere thanks.

F. Otto Schrader, *Kiel.*

The Absurdity of Any Mind-Body Relation. By C. S. Myers, C.B.E., F.R.S., M.D., Sc.D. The L. T. Hobhouse Memorial Trust Lecture, delivered at University College, London, May 19, 1932. (London: Oxford University Press; Humphrey Milford. 1932. Pp. 27. Price 2s. net.)

This commemoration lecture deals with a theme which was of great interest to the constructive thinker in whose honour the memorial trust was founded. The lecturer's thesis is that "the notion of any relation between mind and body is absurd because mental activity and living bodily activity are identical" (p. 6). The only dualism acceptable is that between the living organism and the lifeless universe. Both are to be interpreted in terms of activity, since the ultimate nature of reality is to be found in process or acts in a space-time continuum. The distinction between them is that whereas the activity of the lifeless universe is "mechanical," the activity of the living organism is "directive," it has *inherent* ends. Yet this distinction of "mechanical" and "directive" activity is one which mind itself has drawn, both are abstractions from reality. The mechanical activity of lifeless nature implies an external directive activity, while the directive activity of the living organism requires the mechanical activity of the items which compose it. Each is thus complementary to the other.

[1] The "Pure Matter" (*śuddha-sattva*) of later theology, of which also the bodies of the liberated consist; see *Introduction to the Pāñcarātra*, p. 51. The Pāñcarātra is a more legitimate help for interpreting the Gītā than all the commentaries.

[2] As in the first chapter, those from Vol. I. On pp. 542 and 546 the same thing is said on the Sātvatas, and even the footnote is repeated.

[3] As the one on Buddhist Yoga the proper place for which (in this fullness) is Vol. I, or as the reproduction (pp. 496–498), from Tachibana's *Ethics of Buddhism*, of his whole long list of vices in Buddhism.

[4] *E.g.*, for the doctrine of "reflection," we are not referred to the important passages on pp. 72 and 197, nor to pp. 84 and 106, but merely to pp. 50 and 55, where the theory is but incidentally hinted at.

Dr. Myers compares his doctrine that wherever there is living organism there is directive activity, and that this is mental, with Hobhouse's belief in a "central mind," whose drive makes for the purposive development of the world. Mind in this sense is a wide term. The lecturer's thesis requires him to advance from this wide interpretation to the directive activity of a *conscious* self. Granted that a mind body relation is absurd when all bodily activity is directive and all directive activity is mental, is this the statement of the whole case? It would be if "activity" with the adjective "conscious" in front of it meant just what it did when the activity of a living organism was under discussion. But does it? When purposive or directive activity was contrasted with mechanical, activity indicated movement in space and time. What does Dr. Myers mean by "conscious" activity? It is not consciousness which renders a movement directive, for, he says, there are "forms of directive activity which never become conscious." Dr. Myers recognizes differences of level and of sphere of mental activity. Consciousness is "the expression of the highest form of directive activity of the living organism." "Consciousness is the highest, unitary, pontifical system which we call the self." Confining ourselves to what Dr. Myers calls "acts" of the self, we have "conscious conative acts of apprehending, recalling, deciding, inferring, etc." Now admittedly such acts result in purposive movement in space and time, but can conscious activity be simply identified with movement activity? Can we identify the conscious activity of reaching a conclusion with the purposive activity of the organism? If it is maintained that we can, it must be shown that an act of inferring is movement in space and time. This is a claim many psychologists would deny. Again, can we say that the subordination of chance impulses to fixed principles is identical with the systematization of events in the central nervous system? If we say, "yes," must we not at least allow that the events are known to us in two different ways, the one as a sequence of directive events in the space-time continuum, the other as an immediate experience for which spatial relations only appear to have a metaphorical significance? This makes it difficult to deny some line of differentiation between them. We have the problem of explaining how that which is experienced as "activity," but not as movement, finds a counterpart in directive movement, and here surely we have *a* problem of relation, even if it be not that which the lecturer has declared to be absurd.

Dr. Myers succeeds in putting the old mind-body problem in a new setting. His treatment of it is stimulating, and, as this review shows, provocative. The lecture is admirable in form, and is a valuable complement to the lecture, "On the Nature of Mind," which he delivered as President of Section J of the British Association at its centenary meeting in London in 1931.

BEATRICE EDGELL.

What is Beauty? By E. F. CARRITT. (Oxford: Clarendon Press. London: Humphrey Milford. 1932. Pp. 111. Price 3s. 6d. net.)

The study of Æsthetics has been much neglected in this country. The philosophers on the whole do not greatly care for it; artists, rightly enough, do not bother their heads much with abstract questions, the psychologists pursue their experiments in happy disregard of the larger issues. The critics, with honourable exceptions, have long ago forgotten that the philosophical furnishings of their mental dwelling-houses, though bought by them at the sales, were made once upon a time by workmen who cared for clear thinking. And the plain man, though not "artistic," knows what he likes.

It will do everyone good to read Mr. Carritt's little book. Mr. Carritt really does know what he is talking about; and though this new work of his contains few references to names, it is the outcome of a deep knowledge of the subject which is equalled by few, if any, British writers.

In the most lucid and untechnical of language, Mr. Carritt considers in turn the main theories of beauty that have been put forward in the past, and during recent years. In spite of the common saw, we all *do* dispute about taste, and our dispute mainly resolves itself into the question, What is Beauty? Mr. Carritt begins (Chapter I) by stating that beauty means *something*, and that it does not mean usefulness or agreeableness, or mere associativeness—though associations properly fused in æsthetic experience have an important part to play. In the second chapter he discusses, and dismisses, the theory that beauty is truth or a kind of truth. Beauty is certainly not truth in the sense of being merely an imitation of fact. The views that art gives universal truths, or that it gives deeper truths and values, are more plausible; but art is not science, nor philosophy, nor religion. The importance of some of these opinions is that they suggest that it is the things in the human heart which art reveals, that a thing is beautiful because and in so far as it truthfully expresses a genuine human feeling. And as human feelings contain among them *aspirations*, the theory that beauty is goodness (Chapter III) has some claim to validity, though if this theory merely means that art must be *edifying*, it cannot be true.

What is the "reality" of beauty (Chapter IV)? Mr. Carritt points out truly that it is not a physical character, like size or weight or movement, and he goes on to discuss the very interesting question of *what*, or *where*, is a symphony or poem. He concludes by saying (what to me seems distinctly doubtful) that it exists only in the minds of those who enjoy it. (This, by the way, does not at all conflict with the fact that there is both good and bad taste.) Yet though beauty is really a mental experience, form and pattern are obviously important (Chapter V). People often go wrong about form and pattern, supposing it to be separate from the meaning. But pattern is not separate from meaning; it is the embodiment or expression of meaning, and the slightest change of pattern *is* a change of meaning. In the end Mr. Carritt comes down to a critical acceptance of Croce's theory that beauty is expression, expression of feeling, or "the contemplation of feeling expressed in an individual image."

I have space only for the bare statement of some doubts centred about one main Doubt.

Is it really adequate to say, with Mr. Carritt, that beauty is the expression of *feeling*, that things have beauty only in so far as they speak of the *human* heart? Would it not be truer to say that beauty is the expression of *what* moves the human heart? (the human heart may be *one* of the important things that move the human heart), and that beauty which is also great expresses, not necessarily moral goodness, but something of what Plato means when he speaks of the Good? Mr. Carritt, I think, rather spoils his discussion of beauty as goodness by taking "goodness" in a narrow moral sense (as he rather spoils his passages on "Beauty" and "deeper" truths by interpreting truth as the truth of propositions). As the religious genius finds peace only by self-surrender to God, may it not be too that in experience of great art we surrender, rather than express, ourselves, and that if we express, we express Good which exists independently of our own selves or feelings? May not art be "inspired" more literally than we think? Human beings are of great importance, but may not one of the greatest elements of their importance lie just in their power of apprehending and assimilating an immeasurably rich reality?

The same tendency to overstress the human subject is, I think, seen in the statement that beauty is in the mind of the beholder. It is not, says Mr. Carritt (quoting Cook Wilson), things, but we, who mean. But surely when we say "This is beautiful," we are *not* referring to a *mental* experience, but to a *poem*, or a *play*, or a *symphony*. Instead of saying "We mean, not things," it seems to me sounder to say here that *things*—the seen picture and the heard poem—*mean-for-us*. And, indeed, may we not go further? Is it, once again, so very certain that "things" in the universe about and beyond us mean nothing at all? What in particular of the "beauty of nature"? It is of course true that we do often falsely impute meaning to the physical data of art: the mountain does not "rise," nor is yellow literally and simply "cheerful." Yet art may, more than we recognize, borrow from what are, quite plausibly, the *real* meanings of natural phenomena—the mystery and grandeur, the tragedy and the peace. And so borrowing, it may in this way, as in others, be a genuine and significant revelation of reality.

LOUIS ARNAUD REID.

Ethical Relativity. By EDWARD WESTERMARCK, Ph.D., LL.D. (London: Kegan Paul, Trench, Trübner and Co. 1932. Pp. xviii + 301. Price 12s. 6d.).

The author develops the theory, advocated in his earlier work, that moral values have an emotional origin, and that therefore the objectivity ascribed to them is illusory. Having criticized and dismissed the main arguments for objectivity, he proceeds to describe the moral emotions, and to seek their psychological and biological causes. Moral emotions are said to be of two kinds, moral disapproval and moral approval. They are derived from primitive resentment felt toward an aggressor as a source of pain, and primitive 'retributive kindly emotion' felt toward certain individuals as sources of pleasure. These emotional tendencies themselves are said to be easily explained by their usefulness. Moral emotions, the author insists, are the causes, not the consequences, of moral judgments; and moral principles are generalizations based on such judgments. The main cause of the impartiality (or apparent impartiality) of moral emotions is said to be the fact "that society is the birthplace of the moral consciousness; that the first moral judgments expressed, not the primitive emotions of isolated individuals, but emotions felt by the society at large; that tribal custom was the earliest rule of duty"; and further, "that every deviation from custom is apt to call forth public disapproval." The individual moral reformer is one who, though he attacks custom, does so because he is more developed than his fellows in the disinterestedness and apparent impartiality which was itself the outcome of the binding force of custom.

The author next proceeds to analyse the moral concepts, and trace them to their emotional origins. With regard to the competition between 'ought' and goodness for supremacy, he holds that "the concept of duty can no more be derived from that of goodness than the concept of goodness can be derived from that of duty." Duty, he says, springs from primitive disapproval, goodness from primitive approval. There follows an interesting discussion of the subjects of moral judgments among primitive and civilized peoples. Changes in morality are said to be very unlike changes in scientific thought, which are governed by the progressive discovery of objective facts. Moral changes, on the other hand, are due to changes of emotional tendencies, and call for purely psychological explanation. Finally, the author undertakes to show the controlling

emotional background of various normative ethical theories. The concluding chapter is devoted to the theory of Kant, which, with its insistence on duty, is said to spring mainly from a strong feeling for the disinterestedness and impartiality imposed by social custom.

As a psychological account of the growth of moral ideas, the book is significant. It contains much cogent argument, and many interesting anthropological data. As an account of the epistemology of moral values it is very controversial. I have thought it best in a short review merely to summarize the contents, since adequate criticism would have to be lengthy. One fundamental point, however, must be mentioned. The whole argument depends on the proposition that "no objectivity can come from an emotion," a view which, though often accepted, is not unassailable. An emotion may be regarded as essentially a reaction to an objective situation, even if only to an internal physiological one. It is feeling; but in spite of Professor Westermarck it includes apprehension of the unanalysable goodness or badness of something, say of organic fulfilment or hindrance. These, one may argue, are the primitive good and bad. Others have to be discovered later. And even in the primitive reaction, say of the resentful animal, or the resentful man, there is a kind of moral element, an attitude of 'this hindrance *ought* not to be.' Thus the origin of the objectivity and the universality of moral experience seems to lie much deeper than Professor Westermarck's inquiry has led him.

W. Olaf Stapledon.

The Physical Significance of the Quantum Theory. By F. A. Lindemann, M.A., D.Phil., F.R.S., Professor of Experimental Philosophy in the University of Oxford. (Oxford: Clarendon Press. 1932. London: Humphrey Milford. Pp. vi + 148. Price 7s. 6d.)

Of the many attempts to estimate the physical significance of the Quantum Theory of physics, this is undoubtedly the most important. Professor Lindemann has maintained for some years that the quantum difficulties of physics are due to the fact that space and time are inadequate concepts for the description of reality, and in this readable and stimulating book he attempts to show in what way their inadequacy can be overcome.

In proving his thesis he has to make use of two postulates. The first is the result of experiment—the now well-known uncertainty principle of Heisenberg. This states that the measurement of any one co-ordinate produces an uncertainty in the conjugated co-ordinate; and further, that the product of the two inaccuracies has a definite universal mean value h which is called Planck's Constant. The latter portion of this statement is, of course, the most important, since even on the classical theory the former would be true when considering very small particles. For instance, if we consider, as Professor Lindemann does, the determination of the positional co-ordinate of a particle, we should in general use a microscope: in order to do this we should have to illuminate the particle, which means that radiation of some sort would have to be made to fall on it. But, unfortunately, radiation exerts a pressure, and this will give the particle momentum, so that it moves from the position which we are trying accurately to determine. All this follows from the classical continuous theory, but there would be no definite relation between the uncertainty in the measurement of position and the corresponding uncertainty in the measurement of the momentum. The principle that there is an invariable connection between the two, viz. that their product has the mean value h, contains the root of the whole quantum problem.

At present there is no explanation; it rests on experimental evidence, and all we can say is that nature must be atomic and not continuous in its ultimate structure.

The second postulate which the author has to maintain is that if a statement about one co-ordinate (*e.g.* the position) of a particle is to have any meaning, we must assume that the other co-ordinate (*e.g.* the momentum) has on the average the value it would have had if the appropriate observation had been made. At first sight this appears to be an arbitrary restriction on the imagination, as, in fact, it is when stated in this form (p. 48). There is no reason at all why we should not imagine what would happen, say, when the universe is at the absolute zero of temperature ("the end of the world"), when observation of any kind is clearly out of the question. Such considerations would undoubtedly have meaning. But if our theoretical considerations are to account for the results of *observation and experiment*, as is usually the case, and, moreover, it is known that the very act of observation affects the action concerned, then clearly a statement about it which ignores the act of observation will be of no *physical value, i.e.* it will not help to correlate the results of experiment. If, therefore, we may venture to alter Professor Lindemann's second postulate to something like the following: in the domain of the ultimate particles of nature, if a statement about one co-ordinate (*e.g.* the position) of a particle is to have any value in explaining the results of observation, the conjugated co-ordinate (*e.g.* the momentum) must be assumed to have, on the average, the value it would have had if the appropriate observation had been made—then the postulate becomes self-evident and we need not hesitate to accept its validity.

These two postulates granted, the author is able, in a most brilliant manner, to justify his claim "to clear up the mystery surrounding their origin (the quantum anomalies) and to expose the true physical significance of the Quantum Theory." Particularly illuminating is the explanation of the difference between the statistics of classical kinetic theory, that of Planck, Einstein, and Bose, and the Fermi-Dirac statistics.

The book is quite short and lucidly written, and no good purpose would be served by attempting to condense Professor Lindemann's treatment here. It is a book which, although clearly not intended to be a popular one, is nevertheless one which should be read by all who have a grasp of the problems of quantum physics and have so far been unable to estimate their real physical significance.

G. B. Brown.

The Idealistic Conception of Religion. Vico, Hegel, Gentile. By Aline Lion, D.Phil. With a Preface by Clement C. J. Webb. (Oxford: The Clarendon Press. London: Humphrey Milford. 1932. Pp. xvi + 208. Price 12s. 6d. net.)

Dr. Lion must be congratulated on her facility in writing in a language not her own. Alike in vocabulary and style, few British writers would have done better. Herself a pupil of Gentile, she has naturally given us a good deal of the type of thought associated with his name, and yet her discipleship is in no way uncritical or slavish. She very rightly begins the story of the idealistic conception of religion with Vico and Hegel, especially Hegel, before coming to that exposition and criticism of Gentile, and incidentally of Croce, which is the chief characteristic of the book. The authoress sets forth as her main contention that religion must be regarded as an autonomous and permanent

form of spiritual life, and the enemy is individualism. The treatment is abstract. The writer has no place for psychology. James's *Varieties of Religious Experience* is "typical of the pseudo-scientific attitude towards religion," and that is why she is never in touch with the actualities of religion as a life. For her, the empirical is the non-philosophic. It is precisely that attitude that constitutes the artificiality of many philosophies of religion. A philosophy of aesthetics may conceivably be as removed as is Dr. Lion's book from the actuality of its subject, but art is not an expression of a personal relationship. Religion is essentially such, and the philosophy that sees in religion an activity similar to its own misses the whole point of its subject. The school to which the writer belongs has persistently misrepresented religion for exactly this reason.

One may agree that religion necessitates a society or church. Dr. Lion tells us that the Church "is the body of the spiritual life common to all Christians," but it is somewhat surprising to learn in the words that immediately follow that "The Pope is the voice and embodiment of Jesus Christ continuing through the ages the *ipse dixit*." Perhaps that explains why she regards the Reformation as a retrograde movement, though one may agree that it did not give the personal liberty that many suppose it did, but rather exchanged one authority for another. Yet the Reformed Churches have since attained a liberty in thought and theology that has not come to the Church from which they sprang. There are a number of similar dicta that strike one as unwarranted. For example: "No philosophy could flourish without dogmatic religious belief in eternal truth," which seems palpably false, and "Mysticism is just as anti-social and anti-religious as rationalism because it condemns religion, whilst it becomes itself mere feeling in pietism, and a veiled materialism in a natural religion that is an inferior form of philosophy," a sentence of which one can make nothing.

Throughout the writer seems to envisage only the Christian religion, even when she speaks of the essential common ground of every historical form of religion. If she had ventured sufficiently into the material afforded by the Comparative Study of Religion, it would have been more difficult to defend the thesis that religion is an autonomous and permanent spiritual activity; but for her, as for Parson Thwackum, religion means the Christian religion, and her failure to appraise the phenomena of mysticism is part of the nemesis that awaits all such attempts as despise the empirical method of inquiry. Her position is summed up in these words: "Philosophy cannot start from hypotheses as science does. However fruitful they may be, they are contraband in philosophy, whose realm is knowledge, the realm of what is already known and experienced. Neither can religion start from postulates, however high the degree of their probability; its realm is that of certitude, the certitude, however, which springs from belief." It would seem that this position could be supported only by appeal to mysticism, but Dr. Lion's opinion of mysticism has already been quoted. She seeks support from the fact that she considers that "the creed cannot be a hypothesis, for the hypothetical spirit is the most powerful enemy of religion. . . . The creed is and must be a *given*." This is a long way from the position that probability is the guide of life, which an earlier apologist made famous, but it explains why Dr. Lion requires a Papal embodiment of the Founder of her faith, and thinks philosophy needs a dogmatic religious belief in truth. On such lines one may construct a philosophical defence of a dogmatic form of religion, but not a philosophy of religion as it is actually expressed in the experience of mankind.

The reviewer, whose standpoint differs *toto coelo* from that of Dr. Lion, has perhaps sufficiently made clear his objections to the thesis she propounds,

but it is fair to add that the competence in the discussion of the subject, the skill in expression, and the critical acumen displayed, mark this out as a book above the average in every respect. As Professor Webb, in his preface, says, it is written from a standpoint not well represented in the literature of the subject, and this adds to its value. Moreover, as regards the contention that religion is an independent domain and that neither science nor philosophy is a substitute for it, Dr. Lion is on sound lines. Doubt may be expressed as to the possibility of maintaining the defensive position she adopts, since it seems to imply more than can be secured by simply insisting on the autonomous character of religion. None the less, both as an exposition, particularly of Gentile, and as a contribution to an aspect of religious philosophy somewhat neglected, one is glad to extend a welcome to this book and to express the hope that the writer will return to the problems she raises and leaves as outside her scope.

E. S. Waterhouse.

Freedom of Will. By N. O. Lossky, Professor of Philosophy in the Russian University of Prague. Translated by Natalie Duddington. (London: Williams & Norgate. 1932. Price 6s.)

The solution of the problem of freedom versus determinism may be sought either by taking the consciousness of freedom (or that of obligation, by which it is presupposed) as ultimate, educing its metaphysical consequences, and showing that these are more fertile and comprehensive than the consequences of determinism; or by exhibiting freedom as the consequence of general metaphysical premisses that have been derived and elaborated from quite different grounds. Since Professor Lossky follows the second method, it is necessary to give an outline of his metaphysic.

It is marked firstly by the abstract analysis of reality into the spatio-temporal and the supratemporal aspects, and secondly by the concrete distinction of reality into a multiplicity of reals, which for convenience may be called monads, each of which is a supratemporal activity expressing itself in temporal or spatio-temporal acts. The monads are organized hierarchically: the human body, *e.g.*, is a system of progressively superordinate monads dominated by the mental one (*i.e.* by the one whose mentality is patently realized, for all are at least implicitly mental). From this virtually Leibnizian platform Professor Lossky takes an original leap. The mental monads are not for him, as they were for Leibniz, free from any direct interconnection: they are held together by the presence in all of them of common ideal elements, the general notions and principles that form the framework of all knowledge. God is the supreme monad, at once the source of the unifying element and the creator of all the other monads. The end of the monads is to achieve a fuller community than that involved in their possession of a common set of cognitive principles—the fuller unity of moral co-operation with both one another and God. Materiality is simply a phase in the failure to attain this moral unity: as the new physics emphasizes, corporeality is at bottom impenetrability, the resistance of force to force. It would disappear if every act were guided by the spirit of co-operation. Moral unity is, however, possible because every monad is supratemporally an unlimited fount of potency, and bears within itself a divinely originated Idea of its end, of what it ought to be.

From such an idealism, moralistic and theological, it is the easiest thing in the world to deduce freedom, which, indeed, seems to be postulated in it

from the start. Moreover, as the author admits, it makes everything free, though this is a consequence which our current hasty interpretation of the quantum theory disposes us no longer to regard as intolerable. The difficulty is to do justice to those hard facts of experience and those approved presuppositions of scientific inquiry on which determinism has always rested its strong case. Under the pressure of these Professor Lossky introduces certain distinctions and concludes to a limited though real freedom, the nature of which cannot, in a short review, be well stated, still less dismissed. He calls the theory "arbitrarism," and if I understand it rightly, it is a protest against overstressing the power of the physical, and against reducing the self to its merely empirical character.

Everything hinges largely on the precedent metaphysic, and this, rightly enough, is dogmatically laid down, since it has been expounded in the author's larger books. Independently of the metaphysic, however, the book has value as a reopening of a now neglected problem and as a sketch of its constituent questions, which are suggestively stated to be those of man's freedom from the physical world, from his body, his character, his past, and from God (as against divine omniscience and foreordination). There is also an interesting theory of the conditionality of causal laws to account for the possibility of these in a world of free monads (pp. 96 ff.).

Only a few errors seem to have slipped into the translation. The occasional Greek quotations falter in spelling or accentuation; on p. 53 "supertemporally" should be substituted for "supertemporarily"; on p. 40 the reading should, I am sure, be "an ideal possibility of action that . . ." to refer the relative to its right antecedent; and the note on p. 20 will send the student on a fruitless search, unless he knows that the Weimar edition of Luther is not one of 1525, but the great collection published last century.

T. E. Jessop.

The Theory of Speech and Language. By Alan H. Gardiner, Fellow of the British Academy (Oxford: at the Clarendon Press. London: Humphrey Milford. 1932. Pp. x + 332. Price 10s. 6d.)

In this book and in other books foreshadowed, Dr. Gardiner leaves the fleshpots of Egypt to wander in the wilderness of Sprachphilosophie, where no bread rains from heaven and from whence no man yet descried, even from afar off, the borders of the promised land.

He has explored the arid pages of most of the books in Gunther Ipsen's bibliography, *Sprachphilosophie der Gegenwart* and much else besides. Reviewing the work done, he mentions those controversies which interest him, agrees with some of the disputants, quarrels with others, and at the end reminds us that "we have learnt to distinguish between language and speech, between sentence and word, and between form and function. Subject and predicate have been investigated, and some preliminary notions have been gathered with regard to the so-called 'parts of speech'."

The title of the book is an indication of the importance attached to the distinction between Speech and Language. For example, we gather on page 317 that Dr. Gardiner's "polemizing against Jespersen" would not have been necessary if the Danish scholar "had been clear about the distinction between language and speech, and if he had realized that the so-called parts of speech are categories of language." Jespersen could hardly be expected to have known in 1924 the meanings Dr. Gardiner would attach to 'speech' and 'language' in 1932. He had, however, in 1925 published a book, *Mankind,*

Nation, and Individual from a Linguistic Point of View, the very first chapter of which, entitled "Speech and Language," leaves us in no sort of doubt whatever about Jespersen's clarity and de Saussure's verbalism.

It is doubtful whether de Saussure's distinction between language and speech is of any technical or methodological value, sentence and word mean anything you use them to mean, and Dr. Gardiner has his own way with these words. He is at his weakest when dealing with *form* and *function*, both of which can be used technically to greater advantage in the more objective treatment of speech as a social mechanism.

A further volume is threatened to explain "a host of terms," *e.g.*, "object, phrase, clause, pronoun, tense, case," and the verbal war will drag on about the words we are to use in theory about words.

Philology has been in such a bad case since Wundt and de Saussure, that dissatisfaction with philology has become a chronic complaint with philologists. No philologist has anything striking to say nowadays, if he does not turn, like Dr. Gardiner, to "*the illusions and fallacies which disfigure technical linguistic literature*." Since de Saussure we have had Bally, Brunot, Jespersen, and many attempts in Germany at what one of them calls a *Neuaufbau der Grammatik*, in addition to much *Sprachphilosophie*.

In England Ogden and Richards boldly tackled linguistic theory from the epistemological side, and their dissatisfaction with wordmongers is so acute that many pages of the *Meaning of Meaning* run to ridicule and denunciation. But they are right when they say "Philosophers and philologists alike have failed."

In their attack on the problem of what words mean, Ogden and Richards attempted a general theory of contextual assumption. But the position cannot be taken by assault and battery. No *general* theory of contextual assumption is possible until we have the *particular* contextual background of half a dozen languages worked out in detail by a strictly behaviouristic technique. It was hoped that Dr. Richards' recent book *Mencius on the Mind* would provide some of the material required for a theory of contextual assumption. But from this point of view, it is disappointing. A competent phonetician with some knowledge of sociology and social anthropology will someday give us systematized facts about the use of words, spoken, heard, written and read, by John Bull and his friends in the important recurrent contexts of their normal social life.

Dr. Gardiner realizes the value of the sociological and anthropological points of view, and mentions "the standpoint of everyday life," "the settings of real life." He even attempts to analyse what he calls a "single act of speech."

But these excellent convictions are set in a context of such things as "predicational nexus," "outer and inner word form," "Is a finite verb needful?" and much grammatical disquisition. There are examples like "Pussy is beautiful," "Your cat is very lovely," "He was a very stately man," even "Balbus murum ædificavit." Dr. Gardiner's four uses for the phrase "The lion roars" on p. 247 would not satisfy those students of the University of London whose business it is as part of their ordinary work to analyse technically the form and function of everyday acts of speech, and even the curious words and phrases to be met with as matter for illustration or disputation in grammar books. And this is, in the main, a grammar book. It begins with "The Crisis of Grammar," and true to type it ends with a difference of opinion on the findings of one of those futile Joint Committees so characteristic of philology.

And yet there is much that will not be found in the usual theoretical grammars. Dr. Gardiner rightly insists on intonation as part of the form of

words, and on the importance of metaphor in the use, that is in the meanings of words. Moreover, though Dr. Gardiner apologizes for his incursion into general linguistics as an adventurer, he knows his Continental literature, and those students who are not able to read German Sprachphilosophie, will get glimpses of it through its effect on Dr. Gardiner's pages.

Those who have read Dr. Richards' new book will be especially interested in Dr. Gardiner's inter-lingual difficulties in attempting to think about his subject in German, French, and English. He is aware of these difficulties, and after pointing them out, reminds us that after all, his "book having been written in English, is primarily addressed to an English-speaking public."

As Nietzsche would have said, in a given type of language "everything runs smoothly for one kind of philosophical system, whereas the way is as it were barred for certain other possibilities." A recent philosophical work might not have been written if German had not provided a suitable framework in the systematic trinity of words, *das Befragte*, *das Erfragte*, and *das Gefragte*.

What is philosophy in German may be nonsense when "translated" into English, and *vice versa*.

If only for the glimpses of Dr. Gardiner's wide reading of the Continental literature, quite apart from the background of his well-known work in Egyptian and Semitic studies, this book is to be recommended to all students of what Jespersen called the Philosophy of Grammar.

J. R. Firth.

Fact: the Romance of Mind. By Henry Osborn Taylor. (New York: The Macmillan Company. 1932. Pp. ix+166. Price 7s. 6d. net.)

The theme foreshadowed by this apt though curious title is that what a man calls a fact is conditioned for him by his dominant interests and his cultural atmosphere. Mr. Taylor enumerates various ways of "apprehending and understanding, or creating, fact": the primitive, the religious, the artistic, the practical, the scientific, and the philosophical. Each of these interests welds experience into a coherent system; and as a fact is accepted as such because of its coherence with others, facts may exist, or "be produced," on various planes. But experience, diversified at the circumference, is one at the centre, and no one of its great ventures truly succeeds except when its own special endeavour is tinctured and reinforced by the others. Each, in its own way, is a principle of unity, and the total unity, which yields or creates the true fact, can only result from their perfect fusion.

Both the theme and the diction suggest neo-Idealist affinities, and the author's conviction that perception itself is always coloured with value-interest places him finally on the Idealist side. But he is not really interested in these implications of his view; indeed, if he were, the many vestigial relics in his work of a realist position would be a grave defect. His real concern is with the broad human interests which transform the percept into a "fact," and on these he has much to say in detail which is subtle and stimulating. On their relation to each other he is perhaps more successful as an historian than as an analyst. Possibly a broader view of religion (which he regards simply as one centre among others) would enable him to describe more closely the universal attitude of mind to which he directs our aspiration. But the single sentence which clinches the argument, "a man's best convictions spring from the concurrence of all sides of his nature," dissipates many of its hesitations.

There is nothing deeply original in the book, and both thought and

expression are sometimes loose and ambiguous; but there is a breadth of interest, an historical perspective, and a radiating humanity which make it eminently worth reading.

A. Boyce Gibson.

Abnormal Psychology. By H. L. Hollingworth. (London: Methuen & Co. 1931. Pp. xii + 556. Price 15s.)

If this book on Abnormal Psychology by a distinguished Professor of Psychology suggests, as do others on the same subject by other distinguished academic authorities, that there has been a certain lack of clinical experience in its compilation, none the less it is full of suggestive material, which it behoves everyone interested in the subject not only to read but to study with care. Perhaps the final conclusions in the last chapter which deals with the effects of drugs on the mentality of the individual are the wisest which can be delivered on the subject. "If, then, our knowledge of the way a human being will react to so simple a stimulus as the swallowing of 20 c.c. of alcohol is so limited, what shall we say of his probable reaction to major stimuli that persist through long periods of life and perhaps involve in most subtle ways his feelings and emotions, his incentives and purposes, his domestic, social, religious, and personal relations, his philosophy of life, his whole past history, his peculiar inheritance of mental equipment and temperament, and the habits of his endocrine system? Surely we shall be full of distrust of any simple solution of his development. . . . Reliance on any one of the hundred pet conceptions would only be a delusion."

The author considers that it is most likely that the bizarre behaviour of the mentally deranged is explicable on the theory of a symbolic revival of a pattern of behaviour linked to the present pattern by a common affective reaction, which is after all the generic basis of the analytic conceptions, yet he pours unlimited scorn alike on the analytic schools of Freud, Jung, and Adler, declaring that they are all founded on a false Herbartian philosophy. He certainly does not do justice to the stimulus given to psycho-pathology by Freud which ought to be admitted by all honest observers, however much they may disagree with his theory.

The first chapters are devoted to a discussion of the various approaches to the subject—neuro-anatomical physiological-psychological, and psycho-analogical as he calls it. He then gives an admirable discussion of mental deficiency in which he points out that there is a general defect of the whole individual and that there is no real disease. At the same time the defect is not necessarily equally distributed; that is to say, that the individual may be more advanced in some respects than in others, but the most conspicuous lack in the feebleminded is incapacity for symbolism. This is often called inadequate learning ability, and depends on relative inaptitude for redintegrative activity.

The author states that neurotics as a class rate lower in intelligence than the average man, they are inferior in intelligence, but not feebleminded; the lower the intelligence the more overt, somatic, and physical the symptom. Hysterics are lowest in intelligence; next comes the neurasthenic group; psychasthenics are highest of all, and do not yield an average below that of the normal man.

The last few chapters are on various aspects and phases of psychoneurosis and psychosis, and are in the nature of things inconclusive, and, as has been said, they disclose a lack of clinical experience. None the less this book is a

very valuable addition to the literature of psycho-pathology, inasmuch as it touches on all aspects of the subject in a reasonably clear-thinking and unbiased way, except for the antagonism to analytical methods, and it may be pointed out that this latter opinion is not that of an adherent of any of the three principal analytic schools.

R. G. Gordon.

Mental Deficiency Practice: The Procedure for the Ascertainment and Disposal of the Mentally Defective. By F. C. Shrubsall, M.A., M.D., F.R.C.P., D.P.H., Senior Medical Officer, London County Council, Lecturer in Mental Deficiency, University of London; and A. C. Williams, M.R.C.S., L.R.C.P., D.P.H., Divisional Medical Officer, London County Council. (London: University of London Press. 1932. Pp. vii + 352. Price 12s. 6d.)

This book contains little that will be new to those accustomed to dealing with mental defectives, but the judgment of the authors based on years of administrative experience in the L.C.C., even on well-known problems, is of considerable interest. Their aim, as stated in the preface, is to deal with the subject from the aspect of the steps required for the satisfactory ascertainment of mentally defective individuals and their disposal in institutions, special schools or guardianship, etc. It will, therefore, be of more use to the medical practitioner, official administrator or social worker than to the scientist or philosopher. Nevertheless, many important problems will come to the mind of the reader who is interested in the subject of mental deficiency in its wider implications.

The historical growth of the concept is clearly described. The duties of the various authorities under existing laws are admirably set out and useful hints given on the question of diagnosis. It is pointed out that mental defectives can be classified in many different ways, *e.g.*, temperamentally, anatomically, legally, clinically, etc. The authors describe some 70 per cent. of their cases clinically as "Primary Amentia" (*i.e.* due to inherited conditions or germinal variations), and maintain that this primary amentia has its anatomical basis in general or local neuronic hypoplasia. There seems to be no evidence, however, that neuronic hypoplasia has any close relationship to what is legally known as mental deficiency. More especially so, since nothing in the Mental Deficiency Acts limits the term "mental defect" to a defect of the intellectual aspects of mental activity. No one, for example, at the present time can say, with any degree of credibility, that the brain of a high-grade feeble-minded defective or of a person certified as a "moral imbecile" will be demonstrably any different, micro- or macroscopically, from the average human brain. It would seem that the concept of Primary Amentia needs further elucidation. The account given by the authors of mendelism (p. 29) is inadequate, and they still cling to the belief that mental inferiority behaves as a unit recessive character.

On the psychological side there is plenty of good material in the book. A convenient abridgment of the Stanford-Binet scale is described for use in diagnosis, and this series deserves to be more widely known. The meaning of scattering is alluded to and the diagnostic value of failure in arithmetical calculations is explained. Sensitivity to pain in many defectives is diminished, and the authors point out that this results in lack of appreciation of other people's feelings. The peculiar psychology of the post-encephalitics is described, and their inability to resist impulses is regarded as being of diagnostic value.

For some reason the equally characteristic occulo-gyric crises are not mentioned.

Generally speaking, this is a carefully prepared manual of good practical value as an aid to the understanding of the actual workings of the present system for coping with the problem of mental deficiency.

LIONEL S. PENROSE.

Phases in the Religion of Ancient Rome. By CYRIL BAILEY. (London: Oxford University Press; Humphrey Milford. 1932. Pp. ix + 340. Price 15s.)

As might be expected from him, Mr. Cyril Bailey's lectures on Roman religion, recently delivered before the University of California, are of the highest quality, being at once rich in ripe scholarship and in style admirably clear as well as charming. Very skilfully he manages to cover the whole ground by distinguishing what he cautiously terms "phases," which in so far as they can be shown more or less to form a succession in time amount pretty well to the stages of an historical development and one that corresponds closely with the general expansion of ideas and functions accompanying the evolution of a city-state into an empire. In its turn the purely Roman advance from pre-animistic beginnings, through animism and anthropomorphism, to self-conscious forms of cult with an ethico-theological basis, accords entirely with the process or progress that marks the growth of religious experience wherever savagery, or, let us say, barbarism, can be observed as it gradually changes into civilization. In a way Rome, as judged by comparative standards, shows a certain backwardness, as if in its native soul it clung to the old ways and owed to foreign impulsion most of its desire to subject traditional rituals to rationalization. For that reason, more especially when he contrasts the livelier imagination of Greece as it toys with theology—though the effect on cult was perhaps less than might be supposed—the classical scholar is apt to impute to the genuine old Roman rather less religion than he would be ready to do if he were an anthropologist accustomed to dig for the roots of religious faith and practice in stony soil, where only a few feeble germs are likely to reward the most sympathetic research.

Mr. Bailey, however, with the illuminating groundwork of Warde Fowler to guide him along the right path, has done his best to include within the "circuit of his musings" everything that belongs to that very miscellaneous group of phenomena labelled "magico-religious" by those theorists who wish to hedge. Nor does he thereupon proceed on the authority of Sir James Frazer to chop this group into two disparate halves with a logical hatchet that treats the magical as equivalent to the pseudo-scientific; as if the use of material symbols implied a materialistic outlook. Mr. Bailey sees clearly enough, for instance, that the *silex* preserved in the temple of Jupiter Feretrius had to do with rudimentary religion, though he is even so inclined to speak of "magic" in such a connexion, as if a baby *qua* rudimentary man was not quite human. But the anthropologist ought to have no doubt at all that a rain-stone goes with religion in the making. Thus the Seligmans have recently shown that side by side in the Nile Valley are Nilotes who worship a rain-god by means of prayer and through the mediation of a king who is killed while yet in his prime, like the priest of Nemi, to keep his intercessional vigour up to the mark; whereas the Nilo-Hamites alongside use rain-stones —often a neolithic cult, the far-travelled "thunder-weapon"—and only employ rain-makers, who are, however, sometimes slain in order to encourage

the others. This difference perhaps entitles the Nilotes to rank for typological purposes in a higher class, though it is doubtful whether a Nilo-Hamite, on going over to their method of obtaining rain, would be conscious of any "uplift," or even of any definite break with his former procedure. The truth is that too many of the data on which the interpreter of Roman or Greek religion has to rely are in the nature of mere gobbets, hardly more instructive on the face of them than the oddments that are marked "ceremonial objects" in an ethnological museum. One cannot deduce the doctrine of the Church of England from a dean's gaiters exposed in a shop-window; and so a rain-stone or whatnot has a religious meaning that may turn hardly at all on its being a stone. Mr. Bailey, while successfully avoiding the neologism "the numinous," which truly is enough to set a scholar's teeth on edge, nevertheless would seem to equate *numen* with *anima* as if "the Power manifesting itself in the universe" must be necessarily conceived under a ghost-like form, which, with all respects towards ghosts, who certainly are powerful manifestations of a kind, is surely not the case in the diversified experience of mankind. But these, after all, are matters of opinion touching a very ticklish question of classification which it is difficult to apply at once universally and to a given case considered *per se*. Mr. Bailey is so fair to all his stock of varied facts that anthropologists of all schools will be as grateful to him as the world of scholars.

R. R. Marett.

Prejudice and Impartiality. By G. C. Field, M.A., B.Sc. (London: Methuen & Co. 1932. Pp. vii + 116. Price 2s. 6d.)

We cannot receive this book without offering a welcome to the series of which it is the first volume. These "Monographs on Philosophy and Psychology" are intended to present studies of a popular but serious character in those problems that have a very general interest. The publishers are to be congratulated both for having instituted a series to which there is no competitor, and for having secured Professor Field as editor. Together with this volume a second has appeared on the psychology of study, by Mr. Mace, and further ones are projected on intelligence, on applied logic, and on the evidence of the senses. The format is well chosen; each volume slips easily into the pocket.

Professor Field's interesting choice of subject strikes an excellent first note, for it is less the popularized exposition of a technical problem than the application of a trained temper, knowledge and insight to a question of patent everyday concern. Prejudice is a perpetual and ubiquitous nuisance, and a psychological diagnosis of and prescription for it needs no apology. The author first moves Socratically to a definition of it as judging under the influence of irrelevant emotions, then, after an analysis of judging, determines the point at which irrelevant emotions interfere, passes on to a survey of the kinds of emotional tendency—self-interest, group-loyalty, habit, etc.—chiefly at work, and concludes with a number of thoroughly practical suggestions on the reduction of our liability to prejudice. The technical core of the content, derived from what may be called the orthodox introspective psychology (free, that is, from the oracles of psycho-analysis), will be familiar to students; it is the presentation that calls for notice—its remarkable clarity and ease of movement, its relation at every point to veridical situations, and its frequent condensation into very shrewd observation. On a small book so admirably adapted to so admirable a purpose, a reviewer has no excuse to

dilate; he can only give it his unreserved recommendation, and hope that the forthcoming volumes of the series will maintain a like balance of specialized competence and humane and lucid treatment.

T. E. Jessop.

Books received also:—

J. R. Oliver, D.D., M.D., Ph.D. *Pastoral Psychiatry and Mental Health.* New York and London: Charles Scribner's Sons. 1932. Pp. xiv + 330. 8s. 6d.

Jean Piaget. *The Moral Judgement of the Child* (International Library of Psychology and Philosophy.) London: Kegan Paul, Trench, Trübner & Co. 1932. Pp. ix + 417. 12s. 6d.

J. H. Muirhead, LL.D., F.B.A. *Rule and End in Morals.* Oxford University Press. London: Humphrey Milford. 1932. Pp. vi + 120. 3s. 6d.

J. M. Keynes, C.B. *Essays in Persuasion.* London: Macmillan & Co. 1931. Pp. ix + 376. 10s. 6d.

O. E. Burton, M.A. *A Study in Creative History.* London: George Allen & Unwin Ltd. 1932. Pp. 320. 10s. 6d.

Karl Vossler. (Tr. Oscar Oeser.) *The Spirit of Language in Civilization.* (International Library of Psychology and Philosophy.) London: Kegan Paul, Trench, Trübner & Co. 1932. Pp. vi + 247. 12s. 6d.

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W. T. Stace, Litt.D. *The Theory of Knowledge and Existence.* Oxford at the Clarendon Press. London: Humphrey Milford. Pp. xii + 455. 18s.

F. Alverdes. *The Psychology of Animals.* (International Library of Psychology and Philosophy.) London: Kegan Paul, Trench, Trübner & Co. 1932. Pp. viii + 156. 9s.

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Hilda Taba. (Introduction by W. H. Kilpatrick.) *The Dynamics of Education.* (International Library of Psychology and Philosophy.) London: Kegan Paul, Trench, Trübner & Co. 1932. Pp. xvi + 278. 10s. 6d.

M. Hiriyanna, M.A. *Outlines of Indian Philosophy.* London: George Allen & Unwin Ltd. 1932. Pp. 419. 15s.

V. E. Harlow. *A Bibliography and Genetic Study of American Realism.* U.S.A.: Harlow Publishing Co. 1931. Pp. 132.

F. M. Cornford. *Before and After Socrates.* London: Cambridge University Press. 1932. Pp. x + 113. 4s. 6d.

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CONTENTS

PAGE

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III. SPINOZA'S DOCTRINE OF PRIVATION: Raphael Demos, Ph.D. 155

IV. THE BIOLOGICAL APPROACH TO PHILOSOPHY: A. D. Ritchie, M.A. 167

V. RELATIVITY IN ETHICS: Professor G. R. T. Ross . . . 177

VI. RIGHT ACTIONS AND MOTIVES: P. Leon, M.A. 191

VII. EVERYDAY PHILOSOPHY OF THE TURKISH PEOPLE IN STAMBOUL: Professor A. Hilmi Ömer 205

VIII. PHILOSOPHICAL SURVEY:
PHILOSOPHY IN ITALY 213
PHILOSOPHY IN RUSSIA 216

IX. NEW BOOKS 219

X. CORRESPONDENCE 251

XI. INSTITUTE NOTES 253

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